

CA20N  
DG  
-76529



3 1761 11891412 6

Government  
Publications

# Secondary/Post-Secondary Interface Study

---


## SUMMARY REPORT

---



Ministry  
of  
Education

Ministry of  
Colleges and  
Universities



Digitized by the Internet Archive  
in 2023 with funding from  
University of Toronto

<https://archive.org/details/31761118914126>







## PREFACE

### TABLE OF CONTENTS

#### 1 Introduction 1

#### 11 Secondary/Post-Secondary Interface Study Project 1: Roles and Responsibilities of the Secondary and Post-Secondary Institutions, Canadian Pacific Co. Ltd. 11

#### 111 Secondary/Post-Secondary Interface Project:

This summary deals with the background of the Secondary/Post-Secondary Interface Study and notes the significant findings of the researchers. It does not attempt to integrate the findings and conclusions of these projects, nor does it state policy recommendations or options. These are matters for the current review of policy related to the Interface. 11

More detailed descriptions of the Interface research projects and their findings can be found in the contractors' research reports and in the appendix volumes to these reports. Copies of the contractors' main research reports have been distributed to educational institutions and organizations throughout Ontario, and are also available through the Ontario Government Bookstore. 111



## TABLE OF CONTENTS

I	Introduction	1
II	Secondary/Post-Secondary Interface Study Project I: Roles and Responsibilities of the Secondary and Post-Secondary Institutions. Canadian Facts Co. Ltd.	11
III	Secondary/Post-Secondary Interface Project: Nature of Students. Ross Traub, Ontario Institute for Studies in Education.	57
IV	Continuity and Diversity of Courses: The Secondary/Post-Secondary Interface Project III: Nature of Programs. Alan J.C. King, Queen's University.	77
V	Interproject Analysis: Programs and Student Achievement at the Secondary/Post-Secondary Interface. H.H. Russell, Ontario Institute for Studies in Education.	109
VI	Bibliography	135

# TABLE OF CONTENTS

I	Introduction	4
II	Secondary/Post-Secondary Interface Study Project I: Roles and Responsibilities of the Secondary and Post-Secondary Institutions Canadian Tests Co. Ltd.	11
III	Secondary/Post-Secondary Interface Program: Nature of Studies. Some Trends, Outlook Factors for Studies in Education.	20
IV	Continuity and Discontinuity of Learning: The Secondary/Post-Secondary Interface Program The Nature of Learning. Also J.E. Kelly, Queen's University.	37
V	Interproject Analysis: Methods and Results Achievement at the Secondary/Post-Secondary Interface. M.H. Dumas, Ontario Institute for Studies in Education.	103
VI	Bibliography	117



# CHAPTER 1

## INTRODUCTION

### SECONDARY/POST-SECONDARY INTERFACE STUDY SUMMARY REPORT

#### BACKGROUND

In recent months there has been growing public and professional concern over secondary education and post-secondary education and the co-ordination between them.

Concern has been expressed over "mark inflation" in the secondary schools, and over students' basic language and mathematics skills. There is further concern over the increasing diversity among courses offered in secondary schools, in marking standards, and in student achievement; this diversity, it is claimed, makes it difficult for post-secondary institutions to assess students for admission and placement purposes.

Turning to the universities, it is widely claimed that formula financing (the paying of operating grants in proportion to enrolment) has encouraged post-secondary institutions to lower their admission standards. The Ontario Tests for Admission to College and University (OACU) [subsequently Service for Admissions to College and University (SACU)], instituted following the elimination of Grade 13 departmental examinations, was discontinued

due to the lack of conviction among the universities as to its value<sup>1</sup>.

Some universities have experimented with admitting Ontario Secondary School Graduation Diploma (Year 4, Grade 12) students directly to first year. However, as this could further increase the diversity in background of freshman students the Ministry of Colleges and Universities placed a moratorium on giving universities permission to claim direct SSGD (Year 4, Grade 12) entrants for funding purposes for the duration of the policy review. This leads to the question: Are some SSGD graduates sufficiently prepared for university, and, if so, what should be the status of the Ontario Secondary School Honour Graduation Diploma (Year 5, Grade 13)?

The co-ordination between secondary and post-secondary programs is another area of concern. Has the greater variety in the backgrounds of students entering universities and colleges of applied arts and technology (CAATs) resulted in the proliferation of remedial and special purpose introductory courses at the expense of other activities? Are course offerings at the interface properly articulated, or is there unproductive duplication?

Many recommendations have been made for policy changes by individuals and organizations. Any major policy changes should be made with a clear understanding of public and professional perceptions of the roles of secondary and post-secondary institutions, the facts related to the characteristics of students and their achievement, and the characteristics of secondary and post-secondary programs at the interface. The Interface research program

---

<sup>1</sup>The responsibility for financing the program, originally assumed by the Ontario Government, was passed in 1972 to the universities who, in turn, instituted the testing fee.



was initiated in order to obtain objective data on these matters.

## POLICY REVIEW

In response to the above concerns, the Ontario Ministries of Education and Colleges and Universities began, in early 1975, a joint review of policies affecting the interface between secondary and post-secondary education. In order to ensure that decisions would be made in full light of the facts and prevailing opinion, the ministries began the review by commissioning a number of objective research studies and by soliciting briefs from educational organizations in Ontario.

The research program consists primarily of the three studies summarized in this report:

Project I: Roles and Responsibilities of the Secondary and Post-Secondary Institutions reports on the attitudes of educators, the general public, and students concerning the roles and effectiveness of our educational institutions and policy alternatives.

Project II: Nature of Students reports on the actual levels of achievement of students completing the SSGD or the SSHGD. Achievement test results in language, mathematics, and physics are related to marking standards, to student characteristics (such as background and goals), and to school characteristics (such as size and location). The study also investigates the extent to which students' marks at the end of first year university can be predicted on the basis of their secondary school marks and courses.

Project III: Nature of Programs reports on the material taught in courses on both sides of the interface and identifies gaps and duplications across the interface.

The study also relates these findings to school characteristics, instructors' backgrounds and approaches, and historical factors.

In addition to these three major research studies, an experimental program in achievement testing for purposes of admission to universities was begun in the fall of 1975. In this program, administered by the Council of Ontario Universities, tests in English and mathematics were administered to volunteer freshman students at Brock,<sup>1</sup> McMaster, Waterloo, and Queen's universities. The program was continued in the fall of 1976 with the administration, as part of the registration process, of an English test<sup>2</sup> to freshman students at Carleton and McMaster universities and at Erindale College of the University of Toronto.

In addition to the initiation of research activities, the ministries have solicited written briefs from over 200 organizations in Ontario. These organizations include the Ontario Teachers' Federation and its affiliates, trustee groups, home and school associations, boards of education, universities, colleges of applied arts and technology, The Council of Ontario Universities, and Franco-Ontarian organizations equivalent to these. Opinions and recommendations are being sought on such issues as the appropriate level of diversity in secondary and post-secondary programs, appropriate levels of student achievement, and appropriate means of assessing achievement of students for admission to universities and CAATs. Briefs are to be submitted to the ministries before the end of March 1977.

---

<sup>1</sup> Only the English test was administered.

<sup>2</sup> The same test was used as in Interface Project II, Nature of Students.



It is hoped that a careful consideration of policy alternatives can be undertaken by the two ministries with the research results and briefs at hand. Announcements of policy changes are expected not later than September 1977 for implementation in 1978.

## RESEARCH DESIGN

The next few paragraphs describe some of the significant research design factors that apply to the three major research projects.

### THE TARGET POPULATION

Populations of institutions, students, instructors, and courses were defined for the purpose of describing two distinct interfaces: the SSHGD/University interface and the SSGD/CAAT interface.

The population of secondary schools defined for this study was that of public secondary schools in Ontario. Studies were made of students and courses and teachers of these students and courses in the final year of the SSGD and SSHGD programs.

At the post-secondary level, Ontario's 15 provincially assisted universities and 22 colleges of applied arts and technology were defined to be the population for which the study results must be valid. Students and courses in the first year of post-secondary programs and teachers<sup>1</sup> of these students and courses were studied.

### FRENCH-LANGUAGE SCHOOLS

There are over 20 French-language schools and

---

<sup>1</sup> For Project I, the opinion survey, teachers of first, second, and third year courses were included in the population.

another 20 French-language units in mixed (bilingual) schools producing Francophone SSGD or SSHGD graduates.<sup>1</sup> In order that the results of the study should be representative of all public education in Ontario, the sample of secondary schools includes 14 French-language units from French and mixed schools. Similarly, the sample of universities includes the University of Ottawa, and the sample of CAATs includes Algonquin, two institutions that have a significant number of French-language programs.

#### THE SELECTED DISCIPLINES

Public concern over the basic language and mathematics skills of students and recognition of the importance of communications and mathematics were the two factors that led to the interface study's emphasis on the teaching of first languages (English or French) and mathematics. It has also been considered important, however, to examine the nature of the interface in the science, social science, and humanities areas. Because of time and cost considerations, it was impracticable to study all disciplines in depth; consequently, representative disciplines were selected in each of the above areas.

Physics (Physique) was selected as a representative science because it is a sequential subject; because an achievement test [the Ontario Physics Achievement Test (OPAT)] had been previously developed; and because data from previous administrations of the OPAT were available as a basis for historical comparisons.

History<sup>2</sup> (Histoire) was selected as a representative social science largely because of the current concern for

---

<sup>1</sup> The population, consisting of 42 schools (22 French and 20 mixed), was defined using data obtained in the spring of 1975.

<sup>2</sup> History and second languages were studied for the SSHGD/university interface only.

the teaching of Canadian history. As no suitable achievement test existed in history, and as there was not enough time to develop one, history courses were examined in the Nature of Programs project. The achievement of students in history, however, was not tested in the Nature of Students project.

Finally, second languages<sup>1</sup> (French or English) were selected as representative humanities disciplines.

#### INTERPROJECT ANALYSIS

It was realized early in the design of the Interface Study that the distinction between the analysis of student data in the Nature of Students project and the analysis of program data in the Nature of Programs project was somewhat arbitrary and that useful information would be lost if student and program data could not be compared. To this end, the research specifications for the Nature of Students and the Nature of Programs studies stipulated that the samples of schools, universities, and CAATs used in the two projects should coincide, and that the students studied in the Nature of Students project should be those attending courses studied in the Nature of Programs project. In this way, it would be possible to conduct an interproject analysis which would, among other things, examine the relevance of the achievement tests to secondary and post-secondary programs and differentiate between student-related and program-related causes of gaps and duplications in programs across the interface.

#### CONTRACTING PROCEDURE AND TIME-LINE

Contracts for the three main projects were tendered, and the contractors selected in December 1975.

---

<sup>1</sup> History and second languages were studied for the SSHGD/university interface only.



Project I, the opinion survey, was awarded to Stevenson and Kellogg Limited, to be executed through their subsidiary company, Canadian Facts Limited. Michael LoPresti was named principal investigator.

Project II: Nature of Students, was awarded to the Ontario Institute for Studies in Education (OISE), with Dr. Ross Traub acting as principal investigator.

Project III: Nature of Programs, was awarded to Queen's University (in association with St. Lawrence College of Applied Arts and Technology and A.D. Revill Associates), with Dr. Alan King of the Queen's University Faculty of Education as principal investigator.

Dr. Howard Russell of OISE was named as a joint member of the Project II and Project III teams, to be responsible, in consultation with Drs. Traub and King, for the co-ordination of project design and data collection activities. Dr. Russell was also assigned the responsibility of conducting and reporting on the interproject analysis, in consultation with Drs. King and Traub.

All contractors began work on their projects early in January 1976. The contractors' reports and the interproject analysis report were due November 15, 1976.

#### SUMMARIES OF THE RESEARCH REPORTS

Chapters two to five of this volume are summary chapters, reprinted from the four main research reports. As these chapters are the work of four research teams, some minor variations in style and terminology are evident. Also, readers are reminded that although the projects were co-ordinated in a general way, the principal investigators were independently responsible for the reports of their teams and for the conclusions drawn. In some cases, specific courses of action are recommended or implied by the



authors. These are strictly the opinion of the author and do not necessarily reflect the views of the Ministries.

The interproject analysis (Chapter 5) is not a summary of projects II and III; nor is it intended to represent the conclusions of the other principal investigators. Rather, it is an individual interpretation based on data drawn from projects II and III.

A careful study of the reports and all of the conclusions will be a part of the policy review now being undertaken by the two Ministries.



CHAPTER II  
SECONDARY/POST-SECONDARY INTERFACE STUDY  
PROJECT I  
ROLES AND RESPONSIBILITIES OF THE SECONDARY AND  
POST-SECONDARY INSTITUTIONS  
CANADIAN FACTS COMPANY LIMITED

I. INTRODUCTION

The research findings reported herein are based on the results of a number of opinion surveys conducted in the spring and summer of 1976. The research program was designed to assess the perceptions of individuals regarding the roles and responsibilities of secondary and post-secondary institutions, with particular reference to the interface between these two levels.

Random samples of individuals from each of the following five population groups were selected:

- the general public (defined as those eligible to vote in an Ontario provincial election);
- secondary school students (defined as those attending Grade 12 or Grade 13 at an Ontario public secondary school in the 1975/76 school year), and post-secondary school students (defined as those attending under-graduate schools at an Ontario university or attending a college of applied arts and technology in the 1975/76 school year);
- secondary school teachers (defined as those teaching Grade 12 and/or Grade 13 courses);

- university faculty (defined as those teaching undergraduate courses at an Ontario university);
- college of applied arts and technology faculty (defined as those teaching year 1 and/or 2 and/or 3 level post-secondary courses at an Ontario CAAT).

Members of the general public and students were personally interviewed in their homes by Canadian Facts' interviewers during July and August, 1976. In the case of educators, questionnaires were distributed to pre-selected faculty at the institutions where they taught. The self-completed questionnaires were retrieved by a representative of, or mailed back to, Canadian Facts. Data collection took place from March through to June, 1976.

Analysis is based on the following number of completions achieved among members of each population group.

	<u>Actual Number Of Completions</u>
General Public	1004
Students	371
Secondary School Teachers	567
University Faculty	439
CAAT Faculty	403

## II. SUMMARY OF FINDINGS

### A. THE SECONDARY SCHOOL SYSTEM

#### 1. THE GOALS OF SECONDARY EDUCATION

At this point in time, the voting public, educators and students at both the secondary and post-secondary levels concur on the level of importance that should be placed on specific goals that might be established for publicly funded



secondary schools in the Province of Ontario. Development of first language skills, problem-solving skills and fostering of a positive attitude toward learning are perceived to be the primary goals of a secondary school education. While members of the general public also feel that development of students' individual and social responsibilities and values (such as encouraging students' self-discipline, respect for authority, ability to work independently and ability to get along and work with others) should be established as a primary goal of the secondary school system, students and educators do not feel this objective is of primary importance. There is one exception, however. In general, secondary school teachers tend to regard the development of interpersonal skills as a more important objective of their system than do post-secondary educators and feel that this should be considered as a primary objective for those students who plan to enter the labour force after secondary school.

Goals which are seen to be of secondary importance are those which deal with the acquisition of specific knowledge, for either academic or career related reasons, and career counselling. Although not regarded as primary, acquisition of academic knowledge is perceived by educators to be a relatively important objective for university bound students, and vocational training and counselling is perceived to be a relatively important objective for work bound students.

## *2. THE SUCCESS OF THE SECONDARY SCHOOL SYSTEM REGARDING ACHIEVEMENT OF THESE OBJECTIVES*

Among educators at the post-secondary level, those objectives which are considered to be of primary importance, namely, development of first language skills, problem solving skills and the fostering of a positive attitude toward learning, are least likely to be viewed as 'successfully' achieved by today's secondary school system. The

system is, however, thought to be relatively successful, at least among educators at the receiving institutions, in nurturing personal growth and development and fostering individual and social responsibilities and values among students. While secondary school teachers might hold similar convictions, in general, they tend to view their system as doing a better job of accomplishing both primary and secondary level objectives among students. Secondary school teachers feel the current system develops personal skills as well as it develops problem solving skills among secondary school students.

Perhaps of greatest significance is educators' lack of confidence that the system is successfully achieving what is perceived to be one of the most important goals of a secondary school education: development of first language skills. Secondary school teachers, university and CAAT faculty agree that basic language skills have deteriorated.

		Percent In Each Case Stating Basic Language Skills Have:		
		<u>Improved</u>	<u>Remained The Same</u>	<u>Deterio- rated</u>
<u>Secondary School Teachers Evaluating ...</u>				
University Bound Students	%	6	16	72
CAAT Bound Students	%	4	16	67
Work Force Bound Students	%	5	16	68
<u>CAAT Faculty Evaluating ...</u>				
CAAT Entrants	%	6	15	70
<u>University Faculty Evaluating ...</u>				
University Entrants	%	2	16	69

Members of the voting public and student populations also tend to be critical of the secondary school system's

ability to develop basic language skills among students, particularly the ability to use correct grammar and spelling, and to express ideas clearly in written form. When asked to compare student performance over time in basic reading and writing skills, 54% of the general public and 59% of the students say such performance has 'deteriorated'. The level of criticism is similar across most population sub-groups but tends to be particularly high among the better educated (those who have had at least some post-secondary education) and students currently attending university.

Related to the belief that basic language skills have deteriorated is the belief among both students and members of the general public that schools do not place enough emphasis on reading and writing skills. About 7-in-10 students and an equally high proportion of the general public agree with the statement, "there is not enough emphasis on reading and writing skills in secondary schools".

Regarding development of interpersonal skills, there is the perception among members of the general public and among students that the secondary school system helps develop a student's ability to work well or get along well with others. While students believe that the education they receive at secondary schools also teaches them respect for authority and helps them to develop self-discipline, members of the general public maintain the opinion that secondary school education fails to achieve these goals very well.

Despite the fact that students feel the system is somewhat more successful in developing their respect for authority than it is in achieving objectives considered to be more important, a sizeable proportion agree that secondary schools do not provide an atmosphere which encourages student respect for authority.



		Percent In Each Case Stating ...		
		Neither Agree Nor		
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>Secondary Schools Provide An Atmosphere Which Encourages Student Respect For Authority:</u>				
General Public	%	21	18	58
Students	%	21	20	60
<u>There Is Not Enough Discipline In The Secondary Schools:</u>				
General Public	%	69	12	16
Students	%	48	20	32

With respect to skill development in mathematics, about half of the educators believe that proficiency has deteriorated over time. However, among those educators who are probably in the best position to evaluate, that is, those who teach mathematics at secondary school or who teach a related discipline such as science or technology at a post-secondary institution, a substantially higher proportion than 50% believes there has been some erosion of proficiency in math skills.

Members of the general public and student populations are less likely than educators to claim that some deterioration in math skills has occurred. In fact, the public's opinions are quite varied regarding student proficiency in mathematics, with 25% of the public stating that performance of secondary school graduates has improved, 31% stating that it has remained the same and 35% stating that it has deteriorated. Among the student population, 38% say performance in math skills has improved, 30% say it has remained the same and 28% say it has deteriorated.



### 3. OVERALL ASSESSMENT OF THE SYSTEM

#### -a) ASSESSMENT

Post-secondary educators are fairly critical of the level of achievement of secondary school graduates who enter an institute of higher learning. Referring to their respective entrants, only 25% of the CAAT faculty and 27% of the university faculty believe that the level of achievement at secondary school has either remained the same or has improved. The balance in each case feels that achievement has deteriorated.

While secondary school teachers tend, on average, to be less critical of the achievement of their students, a sizeable proportion believes that there has been some erosion in achievement, particularly among university or work bound students. In fact, about 52% of secondary school teachers feel that the university entrant today is not as well prepared as he used to be, and 46% feel that achievement of work bound students has deteriorated.

Perhaps the most difficult thing to reconcile is the divergence in opinion between secondary school teachers and CAAT faculty regarding achievement of the CAAT bound student.

<u>Percent Stating Level of Achievement of CAAT Bound Student Has...</u>				
		<u>Remained</u>		
		<u>Improved</u>	<u>The Same</u>	<u>Deteriorated</u>
<u>Evaluation Among:</u>				
Secondary School Teachers	%	31	26	37
CAAT Faculty	%	14	11	74

CAAT faculty's expectations of entrants may be too high, or secondary school teachers' perceptions of CAAT requirements may be too low.

The assessment of the general public regarding the quality of education received at secondary schools over the last ten years approximates that of the secondary school teachers. About 31% of the general public say the quality has improved and 46% say it has deteriorated. In general, while students are more likely than members of the general public to feel that the quality of education at secondary schools has improved, the views of students at university are similar to those of the general public.

-b) REASONS FOR PERCEIVED DETERIORATION

Lack of facility in first language skills and math skills are most often cited by CAAT faculty as reasons for believing that the level of achievement of secondary school students has deteriorated. Although university educators who feel there has been deterioration in the performance of secondary school students also mention deficiencies in first language and math skills as reasons for their opinion, university educators tend to mention these reasons less frequently than do CAAT educators. University educators are more likely than their counterparts at CAATs to mention system related reasons, such as lowering of standards, lack of common uniform standards, or the credit system.

Those secondary school teachers who maintain the opinion that overall achievement has deteriorated most often fault the system per se. Reasons include lowering of scholastic standards, weakness of the credit system, lack of uniform standards and lack of uniform curriculum content.

The concern of educators regarding the credit system is also reflected in the expressed level of agreement to the following attitudinal statements.

		Percent of Educators Stating ...		
			Neither Agree Nor	
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>A System Which Allows Student Selection of Courses Places Too Much Responsibility On Students To Determine What They Need To Know:</u>				
Secondary School Teachers	%	75	5	20
University Faculty	%	76	7	16
CAAT Faculty	%	78	5	17

A System Which Allows  
Student Selection of  
Courses Enhances Personal  
Growth and Development:

Secondary School Teachers	%	54	7	37
University Faculty	%	35	13	51
CAAT Faculty	%	31	10	51

Educators generally agree that the credit system places too much responsibility on students to determine what they need to know, and they are not necessarily convinced that the system enhances personal growth and development (one of the intended objectives of the credit system).

Students and members of the general public express very similar reasons for their impression that there has been deterioration in the quality of secondary school education, faulting the system for the perceived deterioration in the quality of education. The three main criticisms are insufficient emphasis on basic skill development, poor teaching quality and the weakness of the credit system. The response of the general public to a number of related attitudinal

statements serves to highlight these views.

		<u>Percent Stating ...</u>		
			<u>Neither</u>	
			<u>Agree</u>	
			<u>Nor</u>	
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>Some Schools Make It Easier Than Others For Students To Obtain High Marks:</u>				
General Public	%	51	34	13
Students	%	74	16	11
<u>The Quality Of High School Teaching Has Improved Over Time:</u>				
General Public	%	33	26	38
Students	%	38	27	33
<u>It Is More Difficult To Obtain A High School Diploma Than It Used To Be:</u>				
General Public	%	16	19	62
Students	%	14	23	63

Members of the general public and students in particular seem to feel that there is no uniformity of standards across secondary schools. Also, they do not feel it is more difficult to obtain a secondary school diploma than it used to be. Students and members of the general public have not reached any consensus of opinion with respect to any change in the quality of teaching.

*-c) REASONS FOR PERCEIVED IMPROVEMENT*

Those secondary school teachers who feel student achievement has improved most often cite changes in the personal characteristics of the students (more mature, sophisticated, self-confident) and students' general preparation



(better prepared) as reasons for their belief.

The system itself, that is, better teachers and facilities, and more flexibility in terms of courses and more choices offered, is singled out by both the public and students as the principal reason for the perception that the quality of education has improved over the last ten years.

4. ATTITUDES OF THE GENERAL PUBLIC AND STUDENTS TOWARD  
SECONDARY SCHOOL STUDENTS AND THE SYSTEM

-a) STUDENT RELATED ATTITUDES

Individuals are more likely to agree, that students do not have as much respect for a secondary school education as they used to and that students place less value on a secondary school education, than they are to disagree with these statements. Further, there is a tendency on the part of both the public and students to believe that students are not working as hard as they used to. Undoubtedly, these impressions of today's secondary school students relate to the concern expressed by a substantial number of people about the quality of education received at secondary schools.

-b) ATTITUDES TOWARD FINANCING AND COMMUNICATION

Despite concerns about the quality of education received at secondary schools, only about one-quarter of the population feels that additional money should be spent on secondary school education. While it cannot be assumed that people believe there would be no improvement in the quality of secondary school education if more funds were available, results of this study indicate that people are undecided as to whether the money currently spent on education is being well spent. This in part may explain their reluctance to commit more money to secondary school education. In part, these opinions may also be related to the perception that there are communication problems between 'high schools' and the

public. The majority of the general public feels that secondary schools do not do a good job of explaining their objectives to the public, and about 40% feel that educators do not pay enough attention to the views of parents. (The remainder in each case either holds the opposite view or expresses no opinion.)

5. STRUCTURE OF THE SECONDARY SCHOOL SYSTEM

-a) GRADE 13

Most secondary school teachers feel that Grade 13 should not be abolished. Post-secondary educators, while less likely than secondary school teachers to believe that Grade 13 should be retained, are still fairly committed to the five year secondary school system.

		<u>Percent In Each Case Stating Retain Grade 13</u>
Secondary School Teachers	%	79
University Faculty	%	53
CAAT Faculty	%	61

There is also a fairly high level of opposition to the idea of eliminating Grade 13 among students and members of the general public - only about one-quarter in each case agree that Grade 13 should be abolished. The balance either has no opinion (24% of the public and 14% of students) or feels that Grade 13 should be retained.

-b) COMPULSORY CORE

The teaching profession is virtually unanimous in its belief that there should be compulsory core subjects at public secondary schools in Ontario. Further, most think that a compulsory core is necessary for all students, irrespective of their future plans. This opinion is maintained

by 91% of secondary school teachers, 79% of university faculty and 85% of CAAT faculty.

Among those educators at all three types of institutions who want compulsory core, there is almost universal agreement that first language (English/français) and mathematics should be made compulsory subjects. A very high proportion of educators also feels that science and history should be compulsory.

Other subject areas viewed to be important possibilities among those who want compulsory core were:

- social/political/computer science, geography - mentioned by 57% of secondary school teachers, 42% of university faculty and 49% of CAAT faculty;
- second language (French/anglais) - mentioned by 41% of secondary school teachers, 60% of university faculty and 47% of CAAT faculty.<sup>1</sup>

Nearly all educators agree that first language should be a compulsory subject for students in Grades 9 through 12, and between 70% and 80% state that it should be compulsory in Grade 13. About 55% of all secondary school teachers and two-thirds or more of the post-secondary faculty see the need to carry mathematics as a compulsory subject in Grades 9 through 12. Seven-in-ten or more believe mathematics should be compulsory through Grades 9, 10 and 11, and over 8-in-10, only through Grades 9 and 10. With the exception of CAAT faculty, relatively few educators believe that mathematics should be compulsory in Grade 13 - 36% of

---

<sup>1</sup> It should be pointed out that a somewhat smaller proportion of educators mentioned each subject noted above when asked to specify subjects that should be made compulsory in an SSHGD program. The proportions reported above refer to responses obtained when considering an SSGD program.



secondary school teachers, 46% of the university faculty and 60% of the CAAT faculty state that mathematics should be compulsory in Grades 9 through 13.

Members of the general public and students, particularly those studying at a university, generally tend to agree with the views of educators regarding the need for compulsory core subjects. Most feel that first language and mathematics should be compulsory for students from Grade 9 until graduation.

-c) COURSE CONTENT

Not only do educators feel that there should be compulsory core subjects but also, they tend to agree that course content should be standardized for those subjects which are designated compulsory. Standardization of course content for non-compulsory subjects receives little support from educators. Only about 2-in-10 favour uniform course content for all subjects, whereas about 6-in-10 secondary school teachers and university faculty and almost 7-in-10 CAAT faculty favour uniformity of content only for compulsory subjects.

-d) STANDARDIZED ACHIEVEMENT AND METHODS  
OF ASSESSING STUDENT PROFICIENCY

In general, the majority of educators (in fact about 9-in-10) feels that students should be required to attain a standard level of achievement before being granted either an Ontario Secondary School Graduation Diploma or an Honour Graduation Diploma. And, although educators do not feel the need to have uniform course content in non-compulsory subjects, they do indicate that a standard level of achievement should be attained in both compulsory and non-compulsory core subjects before students are granted an SSGD or SSHGD.

Educators do, however, tend to differ in their views as to



which methods should be used to determine student proficiency at secondary schools. Both university and CAAT educators are more likely than secondary school teachers to indicate a desire for some external form of evaluation, that is, one that is outside the responsibility of the secondary schools, such as provincial examinations or standardized achievement tests, to determine students' proficiency in compulsory subjects. In fact, about 80% of CAAT educators believe that an external method of evaluation for compulsory subjects should be required before students are given an SSGD, and 80% of university faculty believe that such should be the case when considering an SSHGD.<sup>1</sup>

Nevertheless, post-secondary educators, like those secondary school teachers who indicate the desire for external evaluation to determine student proficiency in compulsory subjects, most often select an external method in combination with 'an evaluation by teachers'.

Regarding non-compulsory subjects, educators in each case are less likely to indicate the need for an external method of evaluation than they do when asked about compulsory subjects. But a similar pattern of response does exist. Educators at the secondary school level (62%) are more likely than those at the post-secondary level (just over 45%) to specify school set examinations (with or without an evaluation by teachers) as the best method of evaluating student achievement in non-compulsory subjects.<sup>2</sup>

When considering the SSGD, about half of the general public state a preference for some form of externally imposed

---

1 The base for percentages is those educators who state there should be a standardized level of proficiency in compulsory subjects, that is, 93% of all educators.

2 The base for percentages is those educators who state there should be a standardized level of proficiency in non-compulsory subjects, that is, 79% of secondary school teachers, 71% of university faculty and 81% of CAAT faculty.

evaluation, with the majority favouring provincially set exams combined with teacher evaluations. A somewhat larger proportion would require the aforementioned method of evaluation before granting an Honour Graduation Diploma.

About two-thirds of the student population tend to believe that evaluation of achievement before students are granted a Secondary School Graduation Diploma should be the responsibility of the individual schools. About half feel that an external evaluation is a good idea before students are granted an Honour Diploma.

-e) ATTITUDE TOWARD REMEDIAL COURSES

The profession strongly believes that remedial courses should be offered at public secondary schools where necessary to bring student performance to a common acceptable level. Almost all educators feel that remedial courses should be offered, if required, to improve first language and math skills.

Percent In Each Case  
Stating ...

	Neither Agree Nor Agree	Disagree	Disagree
--	----------------------------------	----------	----------

Remedial Courses Should  
Be Offered (Where  
Necessary) In Secondary  
Schools To Bring Student  
Performance To A Common  
Acceptable Level:

Secondary School Teachers	%	82	7	9
University Faculty	%	82	7	9
CAAT Faculty	%	92	4	6

Percent of ... Stating  
'Agree':

Secondary School Teachers	Univer- sity Faculty	CAAT Faculty
%	%	%

Remedial Courses Should  
Be Offered In:

Language skills	91	89	95
Mathematics skills	87	79	90

B. THE UNIVERSITY SYSTEM

1. THE GOALS OF UNIVERSITY EDUCATION

University faculty and secondary school teachers agree  
that the primary goals of an undergraduate university edu-  
cation should be those goals which relate to acquiring

'academic' knowledge rather than those which relate to personal improvement or professional training. Developing an understanding of the theoretical principles of a discipline or field, developing problem solving skills and encouraging students to adopt a positive attitude toward learning are regarded by educators as the most important objectives that could be established at university undergraduate schools in Ontario. Educators feel that fostering individual and social responsibilities and values and nurturing personal growth should be regarded as second-level objectives. Universities should place least emphasis on developing first language skills, according to both the university educators and secondary school teachers. It will be remembered that development of first language skills is clearly viewed as a primary objective of secondary school education. As such, it is understandable that educators do not feel this goal should be given a predominant role at the university undergraduate level.

It should also be noted that neither the universities nor the secondary schools are regarded by educators as having a primary responsibility for the personal growth or development of students, or in fostering individual and social responsibilities and values in students. Educators express the opinion that these objectives should assume some importance, but not primary importance at either the secondary or post-secondary (university) levels.

While both secondary school teachers and university faculty agree that 'professional training' should not be regarded as a primary goal of an undergraduate education, secondary school teachers tend to place more emphasis on this possible role than do university educators. The importance, relative to secondary school teachers, that university faculty assign to the universities' role in professional training is illustrated below.



		Percent of Educators Stating ...		
			Neither Agree Nor	
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>Universities Should Be More Responsive To The Needs of The Market Place:</u>				
University Faculty	%	33	18	49
Secondary School Teachers	%	55	13	31

Not only do members of the general public and students feel that 'academic' oriented kinds of goals should be stressed at universities, but these individuals also feel it is very important that universities provide students with professional skills. In fact, professional training is considered to be one of the primary objectives of university training. The emphasis on professional skill development among the general public and students may, in part, be related to the fact that they were asked to consider Ontario universities in general, not simply the undergraduate schools. Nevertheless, the attitudes maintained by a sizeable proportion of the public and students indicate concern about the value of a general arts' education today.

		Percent Stating ...		
		Neither Agree Nor		
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>A General Arts Education Has Very Little Value In Today's Society:</u>				
General Public	%	45	23	26
Students	%	48	16	32
University Students	%	54	8	37

Universities Should  
Concentrate On Providing  
Professional Skills  
Rather Than Academic  
Skills:

General Public	%	39	26	29
Students	%	40	21	34
University Students	%	35	19	44

2. THE SUCCESS OF UNIVERSITIES REGARDING ACHIEVEMENT OF OBJECTIVES

Generally, university faculty believe they have been relatively successful in achieving a number of their primary objectives. Specifically, they feel they have been successful in developing an understanding of the theoretical principles of a discipline or a field and in developing problem solving skills among university undergraduate students. Although it is not a primary objective in their view, at least for undergraduate schools, educators also feel that universities have quite successfully developed students' professional skills. If the universities are regarded as having done a relatively poor job, by university faculty members, it is with respect to encouraging students to adopt a positive attitude toward learning.

With few exceptions, university students' impressions are not very different from those of the faculty. Universities

have met the following objectives most successfully, according to university students:

- a) providing students with knowledge in particular subjects,
- and b) providing students with specific professional skills.

Universities are not, however, particularly well regarded by students (unlike the faculty) in terms of goal achievement in the area of developing students' problem solving skills. Furthermore, students maintain that development of student creativity and imagination should be an important goal of a university education, and it is a goal which is not perceived to be successfully achieved.

### 3. OVERALL ASSESSMENT OF THE UNIVERSITY SYSTEM

Secondary school teachers and university faculty do not differ in their assessment of the current level of overall achievement of students at universities in comparison with the level attained by students in the past. About 2-in-10 say that achievement has improved, over 2-in-10 say it has remained the same, and the remainder (45% in the case of secondary school teachers and 49% in the case of university faculty) state that achievement has deteriorated. The perceptions of students and the general public regarding the quality of education received at universities over the last ten years are more positive than those of the educators. A relatively small proportion of the public and students (less than 20%) feels that the quality of university education has deteriorated over time. In fact, about 41% of the general public and 49% of the student population feel that the quality of education has improved.

The members of the university faculty who volunteer reasons for deterioration in overall achievement at undergraduate schools are critical of their institutions' entrance



requirements. University educators claim that they are not receiving students as well qualified as they were because entrance standards have been lowered, and/or because secondary school training is not as good as it once was. Further, universities have had to make concessions to a secondary school system which produces a student who is not as well prepared for post-secondary training as he was in the past. As indicated earlier, about 60% of university educators state that basic language skills have deteriorated among secondary school graduates, and about 40% state that math skills have deteriorated. The majority of educators feel that their university's response to this situation has been to lower expectations.

	Percent of University Faculty Who State There Has Been Deterioration In Basic ...	
	Language Skills	Math Skills
	<u>%</u>	<u>%</u>
<u>Their University's Response:</u>		
Lowered expectations	68	54
Provided remedial programs	46	47
Changed course content	22	35

Among those educators, students and members of the general public who believe that the quality of education at universities has improved, 'the teaching faculty and the facilities' is most often cited as a reason for improvement.

#### 4. ATTITUDES TOWARD UNIVERSITIES AND UNIVERSITY STUDENTS

##### -a) ATTITUDES TOWARD STUDENTS

There is a lack of consensus among members of the general public and students regarding the maturity of university entrants today. The proportion of students who agree

that students entering universities are more mature than they used to be is almost equal to the proportion who disagree with this statement. While members of the general public are somewhat more likely than students to believe that university entrants are more mature, over half of the general public either disagrees or expresses 'no opinion' regarding the maturity of university entrants.

Undoubtedly a reflection of their opinions of the quality of education received by students at secondary schools, members of the general public and students are neither certain nor uncertain that students entering universities today are better prepared than before. Only the university students appear to agree strongly that they are not as well prepared as their predecessors.

-b) ATTITUDES RELATED TO STANDARDS

Despite the fact the people are not necessarily convinced that students entering university today are less well prepared than they used to be, there is a tendency to believe that it is easier to gain admittance to university than it was before. This latter opinion is maintained by almost half of all students and by about 60% of university students.

-c) ATTITUDES RELATED TO COURSE CONTENT

Educators were asked to state their opinion on the statement, "all students entering a specific faculty or division within a given university should be required to take a uniform first year program".

		<u>Percent Stating ...</u>		
		Neither Agree Nor		
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>Among:</u>				
University Faculty	%	46	9	45
CAAT Faculty	%	50	16	33
Secondary School Teachers	%	61	12	28

Those educators at the recipient institutions are less likely to approve of a first year university program than are secondary school teachers. In fact, opinion is divided amongst university educators - 46% of the university faculty agree with the idea of a uniform first year, and 45% disagree with the idea.

-d) ATTITUDES RELATED TO FINANCING

Perhaps due to a lack of involvement with, or knowledge of the university system, a sizeable proportion of the general public, when asked to state an opinion on a number of issues related to university financing, is unwilling to adopt either a positive or negative stance. Those who express an opinion, however, do not seem to favour larger expenditures at the university level, although they tend to agree that the money now allotted to the universities is well spent. Furthermore, among people who express an opinion, there is general agreement that university fees should not be increased. Students, those at university in particular, express similar opinions at least in two respects. Again, those who have an opinion appear to be satisfied that the money spent on university education is well spent, and that university fees should not be raised. However, unlike the general public and non-university students, there is a tendency among those at university to concur that overall, not enough money is being spent on universities.

-e) COMMUNICATIONS

Over 40% of the general public and students (over 50% of university students) do not believe that universities do a good job at letting the public know about their objectives or goals. The remainder of the population in each case either states no opinion or agrees that universities are doing a good job communicating with the public.



## 6. STRUCTURE OF UNIVERSITIES

### -a) ADMISSIONS

As previously stated, educators feel that students should be required to attain a standard level of proficiency before being granted either of the secondary school graduation diplomas. But they also believe that minimum admission requirements should be established for all universities in the Province of Ontario. About 79% of the secondary school teachers say that there should be standard minimum admission requirements, as do 70% of the university faculty.

Irrespective of whether the current method of evaluation at secondary schools is retained, or standardized achievement tests or provincial examinations are established as the method of evaluation, educators express the opinion that the minimum standard for university general admission should be 60% or higher on the SSHGD. University educators are more likely than secondary school teachers to state that a higher level of achievement than 60% be necessary for general admission, in particular, if the current method of evaluation is retained.

	Percent of University Faculty Stating Minimum Level For General Admission If Achievement Based On:	
	Current	External
	<u>System</u>	<u>System</u>
<u>Require:</u>	<u>%</u>	<u>%</u>
SSHGD standing only	7	8
60% for SSHGD	29	39
Higher level than 60% for SSHGD	31	22
Other	26	26

Regarding specific program placement, both secondary school teachers and university educators are more likely to exact higher standards of achievement than those felt to be necessary for general admission.

	Percent of University Faculty Stating Minimum Level For Program Placement If Achievement Based On:	
	<u>Current System</u> %	<u>External System</u> %
<u>Require:</u>		
SSHGD standing only	4	5
60% for SSHGD	19	27
Higher level than 60% for SSHGD	41	33
Other	24	22

*-b) METHODS OF ASSESSMENT FOR ADMISSION*

Marks from Grade 13 courses are viewed to be the best way of assessing students for university admission. However, both secondary school teachers and university faculty are more likely to select provincially set rather than school set examinations as the best method of determining students' Grade 13 marks - this is particularly true among members of the university faculty. University entrance exams and standardized achievement tests are seldom selected as the most appropriate method of evaluating students for admission to an Ontario university.

	Percent of ...	
	Secondary	University
	School	Faculty
	Teachers	Faculty
	%	%
<u>Methods of Assessing Students For University Admission:</u>		
Marks from Grade 13 courses - provincially set exams	31	48
Marks from Grade 13 courses - school set exams	21	5
University entrance exams	14	15
Standardized achievement tests	11	10

It should be remembered that a large proportion of both secondary school teachers and post-secondary educators favour an external form of evaluation of secondary school achievement prior to granting graduation diplomas.

-c) ADVANCED STANDING

Relatively few secondary school teachers (about 3-in-10) are in favour of allowing Grade 13 graduates to enter directly into second year, or Grade 12 graduates to enter directly into first year at an Ontario university. Further, only about 21% of university faculty advocate advanced standing of Grade 13 graduates to second year university and 47% advocate advanced standing of Grade 12 graduates to first year university. The majority (67% of secondary school teachers and 57% of university faculty), however, favours advanced standing in specific courses according to student proficiency in those courses.

-d) REMEDIAL PROGRAMS

Educators do not necessarily feel that it is the responsibility of universities to provide remedial programs in order to bring student performance to a common acceptable level - 47% of the university faculty agree that it should be a responsibility of the university and 45% disagree.

		<u>Percent Stating ...</u>		
		Neither Agree Nor		
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>Universities Should Provide Remedial Programs (Where Necessary) To Bring Student Performance To An Acceptable Level:</u>				
University Faculty	%	47	7	45
CAAT Faculty	%	45	13	42
Secondary School Teachers	%	46	12	42

*-e) DUPLICATION OF COURSES AND PROGRAMS*

A relatively small proportion of educators (26% of secondary school teachers and 21% of university faculty) feels that make-up courses on subject matter normally taught at secondary schools should be offered at universities. A somewhat larger proportion in each case, however, does agree with duplication of courses at the secondary and university post-secondary level. 'Universities should offer regular introductory courses in specific disciplines which are also offered at the secondary level' is regarded positively among 33% of the secondary school teachers and 41% of the university faculty. A relatively large proportion of educators, 60% or more, irrespective of the type of institution in which they teach, favours duplication of introductory courses at CAATs and universities.



## *C. COLLEGES OF APPLIED ARTS AND TECHNOLOGY*

### *1. THE GOALS OF A CAAT EDUCATION*

Of the possible objectives that could be established for CAATs, development of vocational skills and development of problem solving skills among CAAT students are perceived by educators, both secondary school teachers and CAAT faculty, to be of most importance. Educators also agree that encouraging students to adopt a positive attitude toward learning and developing the students' understanding of the theoretical principles of a discipline or field should be established as second-level objectives. Educators consider personal development goals, that is, the nurturing of personal growth and development, and the fostering of individual and social responsibilities and values to be of least importance, along with the development of first language skills. CAAT educators, like the university educators and secondary school teachers, when thinking about their respective institutions, feel that goals related to personal development should not be given priority at their institutions.

Members of the general public and students agree with educators with respect to the importance of developing vocational and career skills at Ontario CAATs. Furthermore, members of the general public and students are similar to educators in that they believe CAATs are not simply 'vocational schools'. CAATs have other important objectives of a more academic nature which should be achieved. Namely, it is important that these types of educational institutions provide students with knowledge in particular subjects, continue to develop students' problem solving skills and continue to encourage students to adopt a positive attitude toward learning.

## 2. THE SUCCESS OF CAATS REGARDING ACHIEVEMENT OF OBJECTIVES

Educators and students are relatively satisfied with the performance of CAATs in terms of developing vocational and career skills. But CAAT students and, in particular, faculty members, appear to be more reluctant to credit CAATs for successfully achieving another 'first level' objective, the development of students' problem solving skills.

Irrespective of the fact that CAATs are perceived to be doing a creditable job in the area of vocational and career training, educators are insistent that these institutions continue to be responsive to the social needs as well as to the needs of employers in the communities.

Percent Stating ...				
Neither				
Agree				
Nor				
	<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>	
<u>CAATs Should Be More Responsive To The Needs Of Business, Industry And Other Employers In Communities:</u>				
CAAT Faculty	% 96	2	3	
University Faculty	% 89	2	3	
Secondary School Teachers	% 95	2	2	

CAATs Should Be More Responsive To The Social Needs In Communities:

CAAT Faculty	% 87	9	5
University Faculty	% 79	10	6
Secondary School Teachers	% 85	10	4

Members of the general public and students also feel that the community colleges have a large responsibility in the area of vocational training and upgrading.

Percent Stating ...				
Neither				
Agree				
Nor				
	<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>	
<u>Colleges Should Provide Job Skill Refresher/Upgrading Courses For Adults:</u>				
General Public	% 87	5	2	
Students	% 88	2	2	

### 3. OVERALL ASSESSMENT OF THE CAAT SYSTEM

Over the last five years, the quality of education received at a college of applied arts and technology has improved, according to the majority of students and general public (59% of the general public and 67% of students). About 20% say that the quality has 'remained the same' and only about 5% say it has deteriorated.

CAAT faculty members also feel that their institutions have continued to improve. About 61% of CAAT educators state that the achievement of CAATs has improved over time, while an additional 18% believe that it has remained the same.

Only secondary school teachers appear to be reluctant to praise the CAAT system. A sizeable number of secondary school teachers (30%) refuse to evaluate community colleges, about 33% say achievement of CAAT students has improved, 24% say it has remained the same and 13% feel it has deteriorated.

Those sustaining the opinion that there has been an improvement in the level of achievement among CAAT students primarily acknowledge improvements in the CAAT system. Improvement, they say, results from maturation of the system in conjunction with a recognition and resolution of problems, and an updating of CAAT objectives.

The secondary school teachers and CAAT faculty who maintain that student achievement at CAATs has deteriorated indicate that the preparation of the student entering from the secondary level is inadequate and that lower standards coupled with high enrolment contribute to the deterioration.



#### 4. ATTITUDES TOWARD THE CAAT SYSTEM AND ITS STUDENTS

##### -a) ATTITUDES RELATED TO STUDENTS

Neither the general public nor students are certain that the CAAT entrant today is better prepared or more mature. More than 30% appear to have no basis for evaluation, at least they express 'no opinion'. Those who do express a view tend to split their votes evenly between 'agree' and 'disagree' on the issues of student maturity and level of student preparation.

		<u>Percent Stating ...</u>		
		Neither Agree Nor		
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>Students Entering A College Today Are Better Prepared Than Before:</u>				
General Public	%	35	31	28
Students	%	34	33	25

		<u>Percent Stating ...</u>		
		Neither Agree Nor		
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>Students Entering A College Are More Mature Than They Used To Be:</u>				
General Public	%	38	30	26
Students	%	27	45	19

##### -b) COURSE CONTENT

While post-secondary educators do not agree or disagree with the idea of a uniform first year program for students entering a specific division in any given CAAT, secondary school teachers tend to feel that the idea is a good one.

Almost half of all secondary school teachers favour the plan while the balance is divided between 'no opinion' and disagreement with it.

		<u>Percent Stating ...</u>		
		Neither Agree Nor		
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>All Students Entering A Specific Division Within A Given CAAT Should Be Required To Take A Uniform First Year Program:</u>				
CAAT Faculty	%	45	12	44
University Faculty	%	28	30	34
Secondary School Teachers	%	49	21	27

*-c) ATTITUDES RELATED TO FINANCING*

The patterns of response among students and the general public to issues related to CAAT financing are not very different from the patterns cited earlier in the case of the university system. Among those individuals who express an opinion, there is a tendency to agree that enough money is being spent on education at CAATs, regardless of the general view that the money is well spent. Also, they maintain that college fees should not be increased. CAAT students' perceptions do not differ from the general public's perceptions, except for the fact that students are more likely to agree that not enough money is being spent on college education.

*-d) ATTITUDES RELATED TO COMMUNICATION*

It was stated previously that people want colleges to continue servicing the needs of communities through vocational training and upgrading. Further, individuals feel that colleges ought to provide adult-oriented programs,

for either general interest or upgrading of job skills. Communication with the public, therefore, is necessary if colleges are to fulfill their responsibilities.

		<u>Percent Stating ...</u>		
		Neither Agree Nor		
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>Colleges Do A Good Job Of Letting The Public Know About Their Objectives Or Goals:</u>				
General Public	%	42	27	25
Students	%	42	23	26

Members of both populations under study are more likely to credit colleges for communicating with the public than they are to criticize colleges for the lack thereof.

##### 5. STRUCTURE OF THE CAAT SYSTEM

###### -a) ADMISSIONS

Secondary school teachers and CAAT faculty are decidedly in favour of minimum general admission requirements to CAATs. Furthermore, they generally express a desire for 60% or better at the SSGD level, irrespective of the method of evaluation employed, that is school set examinations or standardized tests/provincial examinations. A relatively small proportion believes that SSGD standing only is a sufficient requirement for admission to CAATs.

	Percent of Educators Stating General Admission Requirements:	
	Secondary School Teachers	CAAT Faculty
	<u>%</u>	<u>%</u>
<u>Minimum Admission If Present System Of Evaluation Maintained:</u>		
Require SSGD standing only	33	33
Require 60% for SSGD	52	42
Require higher level than 60%	8	10
Other	3	9

Minimum Admission If  
Achievement Based On  
Provincial Exams Or  
Standardized Tests:

Require SSGD standing only	38	36
Require 60% for SSGD	50	40
Require higher level than 60%	5	7
Other	4	13

When considering program placements at CAATs, educators seem to want even higher standards than those specified for general admission.

*-b) METHODS OF ASSESSING ADMISSION*

Of the possible methods of assessing students for admission to CAATs, both secondary school teachers and CAAT faculty most frequently mention methods that fall outside the domain of secondary schools' responsibilities.



Percent Stating Best Method  
of Assessment:

<u>Secondary School Teachers</u>	<u>CAAT Faculty</u>
<u>%</u>	<u>%</u>

Possible Methods Of Assessing  
Students For CAAT Admission:

Marks from Grade 12 courses - provincially set exams	23	34
CAAT entrance examinations	15 - 52	20 - 69
Standardized achievement tests	14	15
Marks from Grade 12 courses - school set exams	28	7
Other	11	13

Attitudes of the general public toward admission practices at CAATs to some degree are similar to the attitudes of educators. Generally, they do not agree that only those students with high marks should be admitted. But the public does tend to favour applicant screenings on the basis of performance in common or standardized examinations and restriction on entrants to specific programs depending on the needs of the labour market.

-c) ADVANCED STANDING

While about one-half of the secondary school teachers would permit Grade 13 graduates to enter second year at CAATs, only about 20% of CAAT educators would. However, members of both educator groups (about 8-in-10) feel that advanced standing should be granted in specific courses at CAATs according to student proficiency in those courses.

-d) COMMUNICATION

There is a general agreement among educators that a need for improved communication facilities between the

secondary school system and CAATs exists. CAAT faculty are particularly concerned about the need for communication mechanisms regarding admission standards.

-e) REMEDIAL PROGRAMS

Remedial or upgrading courses for students who lack necessary qualifications in specific subjects or skills should be provided at CAATs according to the majority of general public and students.

		<u>Percent Stating ...</u>		
		Neither Agree Nor		
		<u>Agree</u>	<u>Disagree</u>	<u>Disagree</u>
<u>Colleges Should Provide Remedial Or Upgrading Courses For Students Who Lack Necessary Qualifications In Specific Subjects Or Skills:</u>				
General Public	%	72	13	9
Students	%	80	6	6

-f) DUPLICATION OF COURSES AND PROGRAMS

The majority, over 60% of all educators think that introductory courses in specific disciplines which are taught at universities should also be offered at CAATs. Only about 4-in-10 of the secondary school teachers and CAAT faculty surveyed agree that make-up courses on subject matter normally taught at secondary schools should be offered at CAATs.



CHAPTER III  
SECONDARY/POST-SECONDARY INTERFACE PROJECT  
NATURE OF STUDENTS  
ROSS TRAUB, ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

1. INTRODUCTION TO THE PURPOSE AND DESIGN OF THE STUDY

The purpose of Project II was to examine the "nature of students" near the Interface between schooling at the secondary level and post-secondary education of one sort or another.

In an ideal world, a study with such a purpose would probably be longitudinal in design. Beginning in Grade Twelve, the career path of every individual in a representative sample of students would be traced over five or six years, and questions would be asked: What details of his family background might be related to his schooling? In Grades Nine, Ten and Eleven, what subjects did he take, and at what levels, and with what success? By Grade Twelve or Thirteen, where did he think he was headed? What senior secondary courses did he take to prepare his way there? How well did his teachers find he did in those courses? How well did he do on standardized tests related to some of those courses but administered externally and all across the province? Did the instructors he found on the post-secondary side of the Interface consider his high school preparation adequate? In his first year, did he appear to benefit from what they, in their turn, offered him? Did he follow his chosen course to a successful conclusion? Looking back, what clues were there - at the time of Interface - to the eventual outcome of his post-secondary



career? Though these were the sorts of questions that concerned us in Project II, we had only a part of one school year in which to work with them. And so, instead of watching students move across the Interface, we examined - by means of separate surveys - the nature of students on each side of it in the spring of 1976: Grade Twelve and Grade Thirteen Students (subjects of our "SSGD/SSHGD Surveys") on the one side, and students completing their first year of university (subjects of our "University Records Survey") on the other. Emphasis fell heavily on the former group.

Emphasis fell too on achievement; in fact Project II might almost be re-titled The Nature of Student Achievement, because the loud and common questions, "What are they learning in high school? What do they know, what can they do when they graduate?" express - crudely - concerns provoking the study. A slightly more subtle question, "How do we know what they're learning?" gets to the crux of the problem.

### 1.1 THE SSGD/SSHGD SURVEYS

Measurement is an extremely complex endeavour, and yet basically there are only two ways of approaching the task of measuring human performance, whether that performance be academic, athletic, social, emotional, or whatever. Measurement standards can arise from within the self and be relevant only to the individual, or else they can be applied from without and to some population containing other individuals as well as the self. Trying to maintain self-respect and identity within a social framework, all of us, in our personal lives, constantly juggle these two types of assessment. It is a sign of our educational system's humanity that it too is a juggler. To simplify: in the sixties it became apparent that external and universal standards of measurement had been in hand too long; the "departmentals" were discontinued and attention shifted to the individual with his own potential as his measuring

stick. Provision for individual differences - culminating eventually in the Credit System - received education's emphasis; evaluation was accordingly seen as the domain not of the disinterested, but rather of the concerned and involved. But then a cry went up from a society that felt overcome by the task of making comparisons and selections from among hosts of "unstandardized" individuals.

In examining the nature of student achievement by means of the SSGD/SSHGD Surveys, Project II aimed to discover to what extent an apparent juggling act was actually a balancing act; that is, to what degree uniform standards had not been abandoned - tossed away - but were in fact underlying and applicable to individualized learning and individualized assessment. For this purpose Project II had to compare the performances of groups of senior secondary school students on standardized achievement tests administered across the province, and also to observe the relationship between student performance as measured by those external tests and student performance as reported by the involved educators in the different schools.

Though the study's chief focus, then, was on student achievement, the "nature of students" was by no means ignored. Every student who wrote an achievement test provided as well - by means of a Student Questionnaire designed for the study - certain information regarding his or her age, sex, language(s), parents' education and occupations, and - most significantly for our purposes - personal plans for further education and/or career. Since answers to these questions were likely to have considerable bearing on academic performance, any meaningful examination of student achievement had correspondingly to take them into account.

## 1.2 THE UNIVERSITY RECORDS SURVEY

For students completing their first year at university,

data somewhat parallel to that collected for secondary school students was assembled, though no Project II instruments were administered directly to this post-secondary group. Personal information (roughly equivalent to that solicited by the Student Questionnaire) was obtained from records at the Ontario Universities Application Centre. Those records were also our source for information regarding the students' secondary school performances (the numbers of SSHGD credits they had earned, the subject areas of the SSHGD courses they had taken, and the marks they had achieved in those courses) as reported by their high school teachers and principals in the spring of 1975. (It was on the basis of those reports that the students had been admitted into the first year programs which they were now pursuing.) Once again, as with the school marks for the students in the SSGD/SSHGD Surveys, our interest lay less in the marks themselves, than in how they compared with the results the students achieved on a different measure of achievement, in this case, the measure of first year university.

More than one research study has shown that up until 1968 departmental examination results predicted success at university very well. By means of the University Records Survey, Project II hoped to be able to make some assessment of the predictive value of high school marks in 1975 - nearly a decade after the departmentals were withdrawn and their immeasurable influence on standards began - presumably - to fade. Such an assessment would help answer the question, "If a university determines to admit to first year only those students most likely to succeed in the post-secondary programs of their choice, how can it identify those students from among all applicants?"

## 2. METHOD: THE UNIVERSITY RECORDS SURVEY

The University Records Survey was relatively simple to conduct. The information outlined above (regarding



family and secondary school background) was requested from the Ontario Universities Application Centre for approximately 1500 first year students. Their selection was guided by the fact that we wanted the information resulting from comparisons between their high school marks and their first year grades to be statistically useful for the universities they were attending (the eleven in the Project III study).

For each of the selected students, OUAC file data were requested and data concerning program name and course marks achieved in first year were solicited in the summer of 1976 from the appropriate university registrar. As it turned out, by the end of the 1975-76 university year, only 1290 students with records containing the information we requested were found to be enrolled in a first year program.

### 3. METHOD: THE SSGD/SSHGD SURVEYS

#### 3.1 THE SAMPLES

Our starting point in designing the samples for the SSGD/SSHGD Surveys was the intention that the statements we would eventually be able to formulate on the basis of the survey would be applicable to all students in "regular" public secondary schools in Ontario working to qualify, in June 1976, for either a Secondary School Graduation Diploma or a Secondary School Honour Graduation Diploma. The Francophone segment of that population, attending both Francophone and bilingual schools, was to be included in the study, but it was to be dealt with separately.

Hence both Anglophone and Francophone samples had to be large enough so that statistics for those populations could be estimated with reasonable precision from the data the samples provided. On the other hand, they had to be small enough so that data could be collected and analyzed in the very limited amount of time we had, and so that the costs of data collection would not be prohibitive. The two-stage



sampling procedure shaped by these constraints is described in detail in Chapter Two, Part A, Section 1 of this report. That description shows how the larger Anglophone sample was framed to include schools varying in size and in situation in the province. Chapter Two, Part A, Section 1 makes clear too the procedures that were used to ensure that the samples of students surveyed in each school were statistically representative. Finally, it shows how time-consuming and discouraging is the task of recruiting subjects for survey: though we aimed to sample 60 Anglophone and 15 Francophone schools, the final count was only Anglophone: 53, Francophone: 14.

### 3.2 THE TESTS

One day in May, all the students in the province who had been selected for survey wrote some of the standardized tests which had been chosen or developed for the study. The tests dealt with the following subject areas: English, français and anglais, French as a second language, physics, and mathematics. Each test had been approved by a qualified selection committee, whose task it had been to find or develop - in the limited time available - the best instrument they could to test the knowledge and skills accepted as important to their particular subject at the Interface level. The source and nature of each of the approved tests is outlined briefly in Chapter Two, Part A, Section 2; further details about the contents of the tests, the results of their appraisal by Interface teachers "in the field", and technical matters such as their reliability or difficulty or effectiveness in distributing students across a range of scores - these are provided in Appendices A1-A9.

The most important thing for the reader to recognize even at this early point is that the contents of the tests were valid, though not in the sense of being comprehensive in their coverage of the content of the courses the students were taking nor in their coverage of the expected range of

knowledge of the students. Rather, test selection committees made it their aim to reject any test or item not relevant in both content and difficulty level to students and teachers at the Interface. And each instrument resulting from their deliberations was approved as valid (with some qualifying comments, of course) by the secondary and post-secondary instructors who appraised the test in their subject area by means of the Test Appraisal Inventory designed specifically to assess that test. The significance of the tests being valid cannot be exaggerated. Statements about present student achievement levels at the Interface which are based on how SSGD and SSHGD students performed on these tests are only as meaningful as they are - and they are meaningful - because the tests, though not perfect, were valid.

The administration of the tests was extremely complex due to a number of logistic and statistical factors which are explained in Chapter Two, Part A, Section 3. However, by way of introduction and illustration, these are the sorts of considerations that shaped proceedings on May 26:

- (a) No student could possibly write all the tests for which he was eligible in a single day; yet each test had to be taken by a sample of students both eligible and representative.
- (b) Some tests (English, français and anglais) were to be written by all students - SSGD and SSHGD.
- (c) Others (mathematics achievement and physics) were only valid for SSHGD students taking the courses to which these tests were closely tied.
- (d) The Test of Arithmetic and Basic Algebra, on the other hand, being a basic test, was to be written by all SSGD students whether or not they were enrolled in mathematics courses.
- (e) Certain tests were subdivided and students did not necessarily write all parts; thus, for example, although all Anglophone students wrote the English test package, some escaped the essay

part of it.

- (f) Certain tests (physics and mathematics achievement) required two versions: one in English, one in French.
- (g) Certain tests (English and français) had two different though equivalent forms, and students wrote either one form, or the other - or both.

Complex, indeed, the "choreography" of the test administration!

Complex too, the procedures for having essays scored and adjusting achieved test scores, so that the results reported here would be "fair," as the students would say; that is, valid and reliable. (These procedures are discussed in Chapter Two, Part A, Section 4, and also in various appendices.)

#### 4. FINDINGS

##### A. THE SSGD/SSHGD SURVEYS

##### 4.1 ANGLOPHONE STUDENTS

In answer to the understandable but simplistic question, "How did they do?" two responses are equally immediate: a not enigmatic, "Much as expected," and a further query, "Relative to what?"

It should be made clear right away that support for statements such as "30% of the students wrote Grade A essays!" or "The average mark on the physics test was only 51%!" is nowhere to be found in this report. Levels of achievement are not considered here relative to perfect (100%) levels. Rather, they are examined in relation to one another; the performance of one group of students is measured against that of another group - or several other groups.



In a couple of cases (Grade Thirteen physics and mathematics), the comparisons involve 1976 SSHGD students and Grade Thirteen students of a few years ago. But for the most part comparisons are made among different groups of students within the Project II samples.

How were these groups identified? Firstly, and obviously, by the students' expected qualifications by June, 1976; hence the basic SSGD and SSHGD groupings. Secondly, according to their personal plans for the school year 1976-77. On those bases the following groups were defined:

- (a) SSHGD-POSTSEC: containing students planning to enter a post-secondary institution (a university in the majority of cases);
- (b) SSHGD-OTHER: containing students with various plans (for work, marriage, travel or a return to secondary school) other than post-secondary study;
- (c) SSGD-SEC: containing students planning to return to secondary school, presumably to qualify for their SSHGD;
- (d) SSGD-POSTSEC: containing students planning to enter a post-secondary institution (a College of Applied Arts and Technology - CAAT - in the majority of cases) or training program; and
- (e) SSGD-OTHER: containing students planning to work, marry, travel, etc.

Although primarily these groups were shaped by the anticipated futures of the students comprising them, analysis of the students' secondary school programs, (summarized in Tables 3.16 and 3.19, and described in Section 1 of Chapter Three, Part A) reveals that to some extent the groups are identifiable too by past and present realities in the secondary school careers of the individuals within them.

For example, the typical SSHGD-POSTSEC student prepared himself for university entrance - how consciously, we



cannot measure - by taking 5 advanced level courses in "traditional" academic subjects (i.e. excluding physical education, business, theatre arts, etc.) each year of his high school career. The typical SSHGD-OTHER student acquired fewer credits overall; more specifically, fewer advanced level credits, and fewer "traditional" credits. Students in both SSHGD groups - typically - took one English course a year. As far as their Grade Thirteen level courses were concerned, SSHGD-POSTSEC students included more mathematics/science in their 1975-76 programs, and SSHGD-OTHER included relatively more history/geography/social science.

A similar pattern is discernible in the programs of the three SSGD groups. Typical SSGD-SEC students, apparently working toward university via Grade Thirteen, accumulated in their four years of secondary school more credits overall, including more advanced credits and more credits in mathematics and in traditional subjects collectively, than did typical representatives of the SSGD groups heading for post-secondary training other than university or directly for employment. Of the three groups, the SSGD-OTHER contains students who acquired the fewest credits overall.

Nothing unexpected here. But these facts are evidence that each defined group brought to the achievement tests not only a different (and somewhat shared) vision of personal future (relative to schooling), but also a different (and somewhat common) academic background, and therefore a different sort of preparation for the tests. Hence the usefulness of the groups being isolated and - where they took tests in common - their performances being compared.

#### 4.2 ACHIEVEMENT TEST RESULTS FOR ANGLOPHONE STUDENTS

(These summary conclusions regarding student performance on the achievement tests are based on the information which is presented in Tables 3.20 to 3.31, and Figures 3.1 to 3.6, and which is considered at some length in Section 1

of Chapter Three, Part A.) Only in English were Anglophone students in all five of the groups described above tested by means of the same instruments. But in reading comprehension and language achievement, and in essay writing, the performance of all SSGD and SSHGD students can be compared. Not surprisingly, the ranges of results for the five groups overlap quite considerably, but nevertheless, the groups' rank order (from high to low) runs identifiably as follows: SSHGD-POSTSEC, SSHGD-OTHER, SSGD-SEC, SSGD-POSTSEC, SSGD-OTHER. Surprising perhaps is the fact that the SSGD-SEC group were closer in performance on the subtests for reading comprehension and language achievement to the two SSHGD groups than to the other SSGD groups. Still, these results do provide some evidence (in the difference between the SSGD-SEC group's performance and the performances of both SSHGD groups) that the Grade Thirteen year affects in a positive way the sort of English competence these tests measure.

One instrument, the basic (as opposed to course-related) Test of Arithmetic and Basic Algebra, was written by all Grade Twelve students (and only Grade Twelve students) whether or not they were studying mathematics. Of the three SSGD groups, those returning to high school for Grade Thirteen did best; those leaving school for work did least well.

In the three subject areas (mathematics, French and physics) where tests closely related to Grade Thirteen courses were administered only to SSHGD students taking those courses, test results corroborate the SSHGD-POSTSEC, SSHGD-OTHER rank order that appears in the results for English.

Further, in these three particular tests, group comparisons of an historical or cross-cultural nature are possible. In 1968, 24,000 Grade Thirteen students wrote the same Mathematics Achievement Test as was administered in Project II. The 1976 students (combining SSHGD-POSTSEC and

SSHGD-OTHER group) did as well as their predecessors; while the SSHGD-POSTSEC group - taken by itself - did slightly better than the 1968 students. Reasonable stability in mathematics standards seems apparent. (Table 3.26 and Figure 3.4 present the relevant statistics - and are encouraging.)

Table 3.31 and Figure 3.6 are less so. They describe a comparison between the performance of a large sample of Grade Thirteen physics students in 1970 and Project II's SSHGD physics students' performance on the Physics Achievement Test. They record a serious decline in student achievement in physics between 1970 and the present time. (Explanations for the decline are largely related to the reduction in class hours allotted to the physics course in recent years, and are considered extensively in Chapter Three.)

For a variety of reasons, cross-cultural comparisons for the battery of French tests written by the Anglophone students of Grade Thirteen French are hazardous, though not impossible. No parallel group of Ontario students has taken the tests (which were developed for an international study), and the Project II versions of some subtests were altered slightly from the originals. Still, rough comparisons allow one vague but not meaningless conclusion: 1976 Ontario Grade Thirteen students performed reasonably well in comparison with students in other countries: less well than some, better than others.

#### 4.3 FRANCOPHONE STUDENTS

The Francophone students, like their Anglophone counterparts in the study, were divided into groups according to the qualifications they were expected to have earned by June, 1976 and the plans they reported having made for September, 1976. And it is within the framework of those groups that information about the Francophone students'



performances on the achievement tests is presented both in Chapter Three, Part A of this report and here in the Summary Chapter. All achievement levels are here viewed relatively; the level of one group is measured against that of another; in these comparisons, the "perfect" level plays no part.

In the summary of findings for Anglophones, five groupings for students were defined: SSHGD-POSTSEC and SSHGD-OTHER; and SSGD-SEC, SSGD-POSTSEC and SSGD-OTHER. These categories, and the definitions of them given a few pages ago, apply to the Francophone sample of students in this discussion of results basically as they applied to the Anglophone sample. However, some descriptive comments about the Francophone groups may be useful reminders at this point. The Francophone SSHGD-POSTSEC group can be envisioned as - essentially - university-bound; the SSGD-POSTSEC, as CAAT-bound. Most of the SSGD-SEC group can be regarded as likely to spend one more year in secondary school, and then to proceed to university. A strikingly high percentage of the OTHER groups - at both SSHGD and SSGD levels - see themselves doing full-time jobs by September, 1976.

Analysis of student records (regarding credits acquired throughout secondary school careers and specific courses taken in 1975-76) reveals that each of the five groups can also be characterized somewhat by the sort of program taken by a "typical" student within it. For example, the typical SSHGD-POSTSEC student took five courses in "traditional" academic subjects (one of them being français) at the advanced level of difficulty every year from Grade Nine to Grade Thirteen, and in his final year he likely took six SSHGD courses. The typical SSHGD-OTHER student's career was very similar, though he probably acquired slightly fewer credits overall, and - chances are - one or two fewer mathematics credits. Probably too, in 1975-76, he took fewer SSHGD-level courses than his POSTSEC classmate. Typical SSGD-SEC and SSGD-POSTSEC program records resemble one another closely and differ noticeably from typical



SSGD-OTHER records in the considerably greater number of advanced level credits they contain, and the slightly greater number of mathematics credits. A common thread running through the records of all five groups is the study of both français and anglais from Grade Nine through to the end of Grade Twelve.

#### 4.4 ACHIEVEMENT TEST RESULTS FOR FRANCOPHONE STUDENTS

(Section 2 of Chapter Three, Part A, Tables 3.65 to 3.75 and Figures 3.7 to 3.12 are the sources for these summary conclusions regarding Francophone student performance on the achievement tests.)

Students in all five groups wrote the Test de compréhension en lecture et de connaissance de la langue (français) and the writing test for français, the Composition écrite. The groups' rank order on both tests runs (from high to low) as follows: SSHGD-POSTSEC, SSGD-SEC, SSHGD-OTHER, SSGD-POSTSEC, SSGD-OTHER. Interestingly, the two groups containing a majority of students having in mind the goal (either immediate or eventual) of university outperformed the other three. It would seem that the number of years for which français had been studied in secondary school was not the single most determining factor shaping results on these tests; still, the difference between the SSHGD-POSTSEC and the SSGD-SEC performances tells something about the incremental effect of the Grade Thirteen year on the language competences these tests measured.

The Test de connaissance de la langue (anglais) was also written by all five groups of students, and the results at both extremes of the comparison among the five parallel the results on the français tests: SSHGD-POSTSEC students achieved the highest scores; SSGD-OTHER students achieved the lowest. But the performances of the three "middle" groups defy simple ranking.

All SSGD-level students tried the Test d'arithmétique et d'algèbre de base. Essentially, the SSGD-SEC students - as a group - did better on the test than the SSGD-POSTSEC and SSGD-OTHER groups did. Yet both SSGD-SEC and SSGD-POSTSEC groups - the two which tended to have more mathematics credits in their typical programs - were represented among the highest scorers.

Test results for the Francophones - like the Anglophone results - were neither uncomplicated nor unexpected.

#### 4.5 VARIATION IN MARKING STANDARDS

Two questions were central to both Anglophone and Francophone studies. First, "Do marking standards vary from one school to another?" And then, "If standards do vary, is the variation substantial enough to affect students' academic careers?"

Since the study of marking standard variation was conducted by the same methods in both the Anglophone and Francophone samples of schools, and since the results of the statistical procedures used were, for the most part, parallel for both, a summary description for each of the two variation studies would seem repetitive. Hence, although two separate sections of Chapter Three, Part A deal with the marking standard study, it is outlined here, summarily, in one.

In June, when the final reports for the school year 1975-76 had been prepared, data were collected regarding the marks attained by students who wrote achievement tests in each of the test-related courses they had taken. The achievement test scores themselves provided the basis upon which we compared course marks awarded by different schools and thereby sought information regarding variations in marking standards. Our underlying assumption was simple: similar test performances should be reflected in similar final course marks. (If, exaggerating for illustration, a student

in one school who placed at the 50th percentile in the physics test results got a final physics mark of 80%, and another at the same percentile but attending a different school was given only 60%, the situation would imply variation in standards and would certainly merit investigation.)

However, before such comparisons could be made, the statistical ground had to be prepared in three ways. First, it was necessary to obtain statistical evidence that - within each school - test scores correlated positively and substantially with course marks awarded; that - in other words - students who did well on the tests got correspondingly high grades, and students who did poorly on the tests, got correspondingly low grades. As Chapter Three, Part A explains, the appropriate coefficients of correlation were computed and the results assured us of the required course mark-test score correlations within each school.

Second, we needed to "translate" test scores from the language of percentile ranks into the language that teachers used when they reported course marks, that is, the language of percentages. This "translation" was done by a regression analysis procedure described in Chapter Three, Part A, and the resulting percentages were designated the "predicted marks". (The term indicates that these marks were "translated from" or "estimated using" or "predicted by" the achievement test scores; they are distinguished from the "observed marks", which are the marks actually awarded by teachers for test-related courses.)

The third preparatory step for the between-school study was to calculate two marks for every school: an "observed mean mark" and a "predicted mean mark". These were the basic data required for our study of variation in marking standards.

How were these data used? First, for every course for which there was a related test, we investigated the correlation



between the predicted mean marks and the observed mean marks for all the schools. (Obviously, high correlation would be a sign of consistent standards - or at least no cause for concern about varying standards - across schools. It would indicate that a school's average performance on an "external" and "universal" achievement test was a good predictor of the average mark awarded internally at that school in the relevant course.)

The results of this correlation procedure were positive for both Anglophone and Francophone samples, but the results for the Anglophones were both the higher and the more stable. Something which cannot be stressed too much is that the findings that emerge from the study of marking standards in Francophone schools are relatively unstable, because of the small number of schools in the sample. Nevertheless, the positive correlations between schools' predicted and observed mean marks bear the following message: in schools where students did poorly on the achievement tests, teachers tended (though the tendency was not statistically "strong") to award marks that were correspondingly low; in schools where students did well on the tests teachers tended (again, not "strongly") to award correspondingly high marks. The theme "much as expected" appears once again in our findings.

Further correlations were computed using predicted and observed mean marks. And messages here too were not surprising: in both Anglophone and Francophone samples, if the predicted mean mark for a school was relatively low, teachers tended to assign marks somewhat higher than predicted; and if the predicted mean mark was relatively high, they tended to award marks somewhat lower than predicted. All this means is that teachers are sensitive to overall class achievement/ability, and to the reality that, even in groups of individuals who are academically "hopeless" or in groups composed relentlessly of "geniuses", marks have to be spread, to some degree, over a meaningful



range.

A final correlation was done to investigate the consistency with which observed marks differed from predicted marks across courses within a school; presumably consistency here would indicate something about whether "hard" schools were generally hard, that is, hard in most or all subject areas, and "soft" schools were generally easier. For the Franco-phone sample, no conclusion on this issue is possible; likely because of the small number of schools in the sample, findings here cannot be translated into general statements. In the Anglophone sample, however, there was an observable though weak tendency for the differences between observed and predicted marks - whether small or large - to be consistent in size from course to course within a school. It thus appeared probable that some schools' marking standards were generally closer than others' to the tests' standards.

Finally, the differences between the predicted and the observed marks in each school for each course were subjected to a different kind of analysis, as described in detail in Chapter Three, Part A. The purpose of this procedure was to compare - among schools - the magnitudes of the discrepancies between those two marks (which might be viewed as the average mark a school actually awarded for a course and the average mark it should have awarded had all other things - including marking standards - been equal). The point of measuring and comparing these discrepancies was to assess the degree to which a student's course marks might be affected by the fact that he attended one school and not another.

Results of this analysis showed greater discrepancies and greater variation in discrepancy among schools in the Francophone sample than among Anglophone schools; yet it is likely that the extent of this variation is due in part to the small size of the sample and the instability of the

statistical estimates such a sample can generate. At any rate, the results from the Francophone survey should not be accepted without caution. Nevertheless, the same general conclusion on this issue holds for both Anglophone and Francophone studies: schools vary in the marks they assign, and the variations are great enough to affect a student's standing in the overall mark distribution across the province. They are not so great as to make it worthwhile for a student to change schools in order to raise his marks. (Even for the student who is not particularly academically inclined, the pay-off for a little more effort would outweigh any gains obtainable by changing schools.) But they are great enough to affect a student's post-secondary career so long as universities and other post-secondary institutions select applicants on the basis of marks earned in secondary school. In such competitions, students from schools which award higher marks have a distinct advantage over students from schools which award lower marks.

#### 4.6 ACHIEVEMENT TESTS AS PREDICTORS

As a by-product of the study of marking standard variation, some interesting information was obtained regarding the value of certain of the achievement tests and subtests as predictors of relevant course marks. Details on this subject can be found in Chapter Three, Part A. A brief summary of that information follows here.

##### TESTS FOR ANGLOPHONES

A student's scores on the Writing Test and on all three subtests within the Test of Reading Comprehension and Language Achievement contributed significantly to the prediction of his final English course mark. His writing mark was a slightly more accurate contributor than the others, but less accurate than the four marks combined.

In the battery of tests of French as a second language, both the Reading Test and the Listening Test were excellent predictors.

Each of the Mathematics Achievement Test and the Physics Achievement Test predicted Grade Thirteen course marks in the relevant subject about as accurately as they did in 1967.

#### TESTS FOR FRANCOPHONES

Among the four tests for français (the Composition écrite and the three subtests of the Test de compréhension en lecture et de connaissance de la langue), different tests and combinations of tests were significant predictors for français courses at different year levels and at different levels of difficulty. This is likely an indication of the variation among courses in the emphasis given to certain language competences.

Within the Test de connaissance de la langue (anglais), two subtests (the reading comprehension multiple-choice test and the writing exercise which required a written commentary) contributed significantly to the prediction of marks in anglais courses at all levels.

#### B. THE UNIVERSITY RECORDS SURVEY

The essential purpose of the University Records Survey was to assess the extent to which a student's first year university performance could be predicted from his secondary school marks.

Our sample included students from secondary schools which varied (as we have shown) in the marks they awarded to students performing comparably on achievement tests. Furthermore, these students were pursuing a variety of programs in a variety of universities. Their programs fell



into four categories: Humanities/Arts; Social Sciences; Sciences; and Professions. The universities included: Brock, Carleton, Guelph, Lakehead, Laurentian, McMaster, Ottawa, Toronto, Trent, Waterloo, and Windsor. "Everybody knows" - and everyone accepts the fact - that all programs at all universities are not equal in difficulty. Put another way, and illustrated by tabulations reported in Chapter Three, Part B, the means of the average first year marks achieved by students in the survey varied significantly among the eleven universities and among program areas.

What this means, as far as prediction is concerned, is that there is relatively little point in predicting university performance from Grade Thirteen performance alone - out of context. The significance of context has been accepted for as long as there has been concern about prediction. For instance, the Atkinson Study (begun in 1956) and the OISE studies conducted by Khan and his collaborators in 1970 and 1971 took into account, in their own ways, one or both of the contexts of the university a student attended and the program he took there. And when we looked at our correlations between SSHGD and first year marks where consideration was given to those same two factors (universities and programs), we found encouraging results. The evidence indicated that, using his Grade Thirteen average and information about what university he attends and what course he pursues, a student's university performance is as predictable in 1976 as it was when the departmental examinations still measured his Grade Thirteen achievement and when those examinations had only recently been discontinued.

But, in 1976, an additional contextual factor seemed worth weighing. How, we asked, would the accuracy of prediction be affected by the inclusion of information regarding the secondary school a student attended? Specifically, what would happen to the university mark predicted for a student - on the basis of his Grade Thirteen average, the



university he attended and the program he pursued - if allowance was made for the difference between the marking standard of his particular secondary school and the overall Grade Thirteen marking standard of the schools in the survey? This "allowance" was computed and the rather complex results are explained and their significance is discussed in Chapter Three, Part B of this report.

## 5. CONCLUSIONS

Certain popular - or at least widely noised - opinions about the present situation in the secondary schools and at the Interface seem, on the evidence of this study, to be misconceptions. Perhaps this is a suitable place to draw attention to them.

- (a) There is public concern that students are graduating from our secondary schools with relatively little training in English (or français) and mathematics.

Although Anglophone students in Grade Twelve and Thirteen vary considerably in the proportion of their program which could be labelled "traditionally academic" and which are taken at the difficulty level labelled "advanced", nevertheless, the vast majority of Anglophone students have taken one English course per year during their high school careers, and similarly, the vast majority of Francophone students at the Interface have earned one credit per year in français.

Further, over 50% of students generally, and a full 70% of those who are university-bound, have taken mathematics every year.

- (b) There is some belief that Grade Thirteen

achievement levels "just aren't what they used to be." Anglophone SSHGD-level mathematics students did as well on the Mathematics Achievement Test in 1976 as they did on the same test in 1968.

Anglophone SSHGD-level physics students did rather alarmingly less well in 1976 on the Physics Achievement Test than they did in 1970.

- (c) Many people believe that marking standards in our secondary schools are in a state of chaos.

The correlational analysis run in the study between secondary school course marks and achievement test scores indicate a situation very far from chaotic. Though statistics for Francophone schools are a good deal less stable than those for Anglophone schools, it appears that teachers are sensitive to the real achievement levels of their students and report these levels on scales which are realistic and meaningful for their class groups.

- (d) There is concern that marking standards vary widely from school to school, so that students who are shrewd, if not conscientious, can improve their apparent achievement levels by changing schools, and so that students in some schools have unfair advantages over those in other schools as far as being accepted into certain universities is concerned.

Project II results point to the existence of "hard" and "soft" schools among Anglophone schools in the province. Whether high or low standards are applied consistently across courses within Francophone schools could not be verified, due to the small number of schools in the Francophone

sample. Nevertheless, there is evidence in the results of both surveys that a student's moving from one school to another could indeed affect his relative standing in the provincial distribution of marks for a given course. However, the degree to which his standing would be affected is not so large that he couldn't improve his grade more effectively by simply studying harder.

On the other hand, the degree to which secondary schools vary in the marks they award for comparable performances is substantial enough to affect whether or not a student is accepted into a post-secondary institution, if that institution admits students on a competitive basis and does not control for marking standard variation when considering candidates from a variety of schools.

- (e) Many people are uncertain about the need for expanding post-secondary opportunities for Francophone students.

A sizeable proportion of Francophone students at both SSGD and SSHGD levels reported that their plans to leave school for work at the end of the 1975-76 school year were "second choice" plans; that, had a particular post-secondary program been available in French, they would have taken it.

- (f) There is considerable concern that, in view of the fact that secondary schools vary in their marking standards and students no longer write standardized achievement tests or entrance examinations, universities have insufficient information on which to base their selection of candidates.

Project II demonstrated that even without making adjustments to control for variation in marking standards, predictions regarding applicants' performances in university which are made on the basis of raw school marks are just as accurate as predictions made in the past on the basis of departmental examinations results.

#### 6. A FINAL WORD

Research of this nature is not unlike archaeology. Neither - in spite of the romantic aura surrounding the term "archaeology" - is really a field for drama. The essence of both is a plan of operation both imaginative and utterly realistic, supported by scrupulous and meticulous attention to detail. Data - like fragments of pottery and bone - have to be uncovered, "cleaned up," appropriately related to other pieces, recorded, interpreted. No one would expect an archaeologist to sacrifice thoroughness for speed. Unfortunately, the researcher is often asked to extract "the facts" from his fragments before he has been able to obtain all the data he regards as important for "the whole story", or before he can investigate his data from all the angles he considers illuminating. This study suffers - or at least we who have worked on it suffer - from a sense of the incomplete. It is highly unlikely that, had the time limitations for Project II been less severe, the conclusions drawn from its findings would have been different. But the conclusions could probably have been both accepted and acted upon with less caution, had investigations been less rushed. We are earnest in our hope that research on the matters studied here will be pursued, and that the data accumulated will be thoroughly and imaginatively examined.





CHAPTER IV  
CONTINUITY AND DIVERSITY OF COURSES  
THE SECONDARY/POST-SECONDARY INTERFACE  
PROJECT III: NATURE OF PROGRAMS  
ALAN J.C. KING, FACULTY OF EDUCATION, QUEEN'S UNIVERSITY

In the past months a widespread public concern regarding the quality of education in Ontario has become apparent. In particular, many have come to believe that young people entering post-secondary education and/or the world of work lack suitable language and mathematical skills. It is difficult to pinpoint the reasons for the escalating disaffection with current educational practices, or the extent to which the actual process of education in Ontario itself has contributed. Three changes however, are clearly relevant. They are:

- (1) The decentralization of educational decision-making, leading to variability in what is taught and how students are evaluated;
- (2) A decline in the population of school-age children, leading to strains among teachers and across institutions that are now competing for scarce human and financial resources;
- (3) An increased emphasis in schools on the personal development of the individual student, shifting the emphasis in the schools away from the needs of society.

These events have taken place at a time when the proportionate cost of education are increasing and this tends to encourage the public to see educational

deficiencies in terms of costs. The introduction of schools, courses, and programs for French-speaking students has added further complexity to the situation.

The purpose of the Project III phase of the Interface Study was to examine the relationship between courses at the secondary and post-secondary levels. Two interfaces were defined: between secondary school and year 1 college of applied arts and technology courses; and between year 5 secondary school and year 1 university courses.

In its simplest terms, this investigation is concerned with variability in what is taught, and how it is taught and its effect upon continuity: the relationship between subjects taught in consecutive years. More specifically, the research attempts to respond to the following questions:

- (1) Are there gaps in content covered and/or inconsistencies in the level of competence aimed at in the teaching of subjects that lead to poor preparation of students for the next level of education?
- (2) Are there duplications in content covered and/or inconsistencies in the level of competence aimed at in the teaching of subjects across two institutional levels that lead to poor time economies?
- (3) If there are gaps and/or duplications in subject content, what form do they take and how significant are they?
- (4) Over the past ten years, what trends are visible in course and program enrolments and student achievement, and what factors explain these trends?
- (5) What provisions are presently made for coordinating curricula and standards of achievement in particular subjects within and across the educational institutions under investigation?

## METHODOLOGY

The major task of Project III was to describe in detail the characteristics of a pool of similar courses on each side of an interface and then examine the consequences that ensue for both students and instructors, when students proceed through these courses which form the interface. To keep the study within reasonable limits of time and magnitude the following subjects were selected for study: English, Anglais, Français, French, History, Histoire, Physics, Physique, Mathematics and Mathématiques (French, Anglais, History and Histoire were investigated only across the year 5 secondary school and year 1 university interface).

A sample of 53 English-language and 14 French-language (including "mixed") secondary schools was drawn; 15 colleges and 11 universities were selected as representative of post-secondary institutions. The total number of courses offered by these institutions in the subjects and years under study formed the population of courses; from each population a sample of courses was drawn on the basis of criteria such as enrolment, and similarity to courses offered at equivalent institutions.

Questionnaires, filled out by instructors in the sample of French and English secondary schools, colleges and universities, formed a major source of information for the development of course descriptions. In addition, department chairmen and registrars at universities and colleges and secondary school department heads were interviewed in order to obtain perceptions of the changes that had taken place over the past ten years. Requests for institutional calendars, courses of study and evaluation instruments over the past ten years were made with the same intent. Program and course enrolments and records of student achievement were analysed to determine whether changes had occurred in these two areas.



Rating validation instruments were developed in English, French and mathematics for the purpose of assessing the validity of the rating scales that respondents ( to the questionnaires) used to estimate "average student competence". The analysis of the responses to the rating validation instruments indicated that there were significant differences in the use of the rating scales by instructors across particular subject interfaces; appropriate adjustments in interpretation were made.

The findings in each subject are summarized in the following sections. The approach is first to describe the extent of variability in content and level of competence in the pool of courses for each subject at all institutional levels and then to analyze the extent to which there exists across two institutional levels, gaps (material not taught at one level but required for the next) and duplications (material taught at both institutional levels).

There is a brief statement about the current status of subject coordination across the province and a summary of trends in student achievement, course and program enrolments, and post-secondary admission policies.

#### ENGLISH AND ANGLAIS

##### THE YEAR 4 SECONDARY SCHOOL TO YEAR 1 COLLEGE INTERFACE

The student population in a college English course is heterogeneous. Most students are graduates from year 4 general English courses, some have year 4 advanced English, others have the equivalent of a year 4 secondary school diploma without a year 4 English course and a few do not speak English as a first language. It was, therefore, not surprising that most college instructors (87 percent) found a great deal of variation in the competencies of their incoming students. It is perhaps less easy to perceive the

reasons that led 82 percent of year 4 general and 65 percent of year 4 advanced teachers also to indicate great variation in the competencies of their incoming students. Instructors appear to be as dissatisfied with the level of competence of the students entering their courses as they are struck by the variable preparation of those students. Over 60 percent of the year 4 and college teachers indicated that they would prefer a higher level of competence at entry for their students in most areas. In fact, a third to one half of the year 4 teachers and college instructors were highly dissatisfied with the level of student competence at entry. Reading and essay writing are the areas in which teachers at both levels claimed the greatest improvement was needed.

The year 4 general and advanced level courses varied in content from one school to the next but over 70 percent of the courses sampled could be described as combinations of literature and composition. The approach to literature varied: some used a variety of approaches or organizing themes, others a single approach (EXAMPLE: by genre or theme). The composition component consisted of varying mixtures of formal essay writing, creative and/or practical writing. First-semester college courses, typically offered in business, technology, and general arts/liberal studies divisions, were primarily concerned with the development of oral and written communication skills.

The mismatch between the two levels that this implies tends to be confirmed by another piece of evidence: in the year 4 secondary school and college courses, where aims might be expected to be generally congruent, we found one notable dissimilarity. Year 4 teachers emphasized "the universal elements in human experience through the study of literature" and "appreciation of literature", but the college teachers considered the literature aspect of English unimportant.

Unless more specific requirements are established for entry into college programs it will be essential for the colleges to retain a variety of procedures to accommodate the tremendous differences in abilities of incoming students.

THE YEAR 5 SECONDARY SCHOOL TO YEAR 1 UNIVERSITY INTERFACE

English is not a discipline in which one can precisely identify gaps and duplications at the year 5 secondary-year 1 university interface. The subject is rarely broken down into specific, testable objectives. Furthermore, most instructors see literature as the medium through which language skills are developed. Language development is viewed as a long-term process reinforced in successive years through literature study.

Most of the year 5 English courses offered in the sample of schools were described as combinations of literature and composition. About half used a variety of organizational approaches to literature; the composition component consisted of essay writing mostly based on the literature content. The others utilized a single approach to literature (EXAMPLE: studying specific genres or themes); in these the composition component took the form of more general essay or creative writing. The most common type of first year university English course offered and surveyed was the general survey of English literature organized historically and/or by theme and genre. At both levels the instructional approach was, broadly speaking, similar: close to 80 percent of instructors taught the analysis of literature through an examination of its characteristics, the application of a critical vocabulary in the evaluation of the range, nature and quality of particular works, and the writing of literary critiques. Eighty-five percent of them spent between half and all of their formal instruction time on the teaching of literature.



At both levels, writing and reading were declared to be important aims but less formal instruction time was devoted to the development of these language skills than to literature - 92 percent of year 5 teachers spent less than 40 percent of the time and 65 percent of university instructors less than 20 percent of the time on these objectives. While conceding that more attention is required for language and composition, secondary school teachers claimed that with the reduction of teaching periods from 7 or 8 to 5 in the credit system, time spent on composition (previously allotted 3 periods a week; now cut down to one in most schools), including language work and writing, has been severely curtailed.

The majority of teachers at both the year 5 secondary school and year 1 university level indicated that there was a great deal of variation in knowledge and level of preparation among incoming students. This variability is more pronounced at the university level, for students with differing backgrounds in English enter from many secondary schools. Teachers were also highly critical of the general preparation of their incoming students, and close to 70 percent expressed dissatisfaction with preparation in all principal literature, writing and reading objectives. In particular, it is noteworthy that teachers of year 5 courses consistently assigned lower ratings of competence to their incoming students than year 4 advanced teachers attributed to their graduates. Similarly, year 1 university instructors expressed a much lower opinion of the English abilities of



year 5 graduates than did the year 5 secondary school teachers. The high degree of variability in the background of university freshman undoubtedly contributed to the low level of competence perceived. However, the university instructors' strong criticism of the preparation of students in basic English skills may well be a consequence of the reduced amount of time given to the development of those skills in secondary school English courses.

Teachers at both institutional levels were aiming at the same objectives in their courses, but this does not necessarily mean that duplication in content exists: the teaching of English is concerned with the development of skills more than it is with the acquisition of a body of knowledge. To be sure, university instructors do consider that incoming students are not being adequately prepared in certain areas, but those areas where there are gaps that need scrutiny appear to lie primarily in the language development of the student.

#### YEAR 5 ANGLAIS

In almost all the 14 secondary schools included in the Francophone sample, Anglais courses greatly resembled English courses. Mostly they consisted of combinations of literature and composition, with half of the teachers reporting that literature received over 40 percent of class time. All but one of the teachers spent less than 20 percent of class time on language skills, except for writing, where 5 of the 14 teachers declared they spent more than 20 percent of class time. It is, therefore, not surprising that teachers reported very slight gains in language achievement on completion of the course.

Most of the year 5 Anglais teachers found a great deal of variation in the competencies of their incoming students and over half were dissatisfied with their level of

competence in almost half of the areas of concentration. Teachers also made a low assessment of the average level of students' competence on exit from their courses.

We investigated the Anglais situation at two bilingual universities. Fewer than one percent of Franco-Ontarian students need to take the English-as-a-second-language (ESL) course offered at one university; the other university has not perceived a need to teach a separate ESL course in year 1 English. Thus, one may describe the interface from year 5 Anglais at secondary school to year 1 university as virtually nonexistent. Those Francophone students who proceed from year 5 Anglais to year 1 university are functionally bilingual: They appear to take English, when necessary, along with English-speaking students.

#### FRENCH

The diagnosis of problems which might occur between French in year 5 and French as taught in the universities is rendered difficult by the diffuseness of the interface between them. About one school in three offered year 5 French at two levels of difficulty, and the universities offered it at several levels.

Students may go into courses at the universities with backgrounds in French ranging from minimal experience to 5 years of French at secondary school. Normally a student does not take a course which is designed for someone well below his presumed level of competence. On the other hand, many of the elementary university courses do not have restrictions on entry, and the possibility of a student taking a university course at a level which he has already covered is very real. In fact, one of the most interesting points noted in the study bears on this issue. A group of 8 university instructors reporting on courses which did not have year 5 prerequisites gave essentially the same

competence rating to their incoming students as did the 12 instructors reporting on courses which had such a requirement. With so small a sample the conclusions ought to be tentative, but, the data suggest that the streaming of students from secondary school courses into university courses is casual and that the potential for gaps and duplications in course content is considerable.

The situation just described could contribute a good deal toward providing a heterogeneous group of students in the universities. This heterogeneity was widely recognized and often deplored by both university and secondary school teachers. Problems of variability in the secondary schools must, however, have another basis since the secondary schools maintain quite a strict system of prerequisites. The principal cause of variability there seems to be the differences in standards which appear to be chiefly expressed through the decision of some teachers to spend a good deal of time on cultural, literary or dramatic affairs when other teachers would consider the students still lacking the basic language requirements for profitable excursions into these fields.

The data gathered on emphasis on grammar, vocabulary, writing, reading and speaking, in almost all courses, together with data on the similarity between university and secondary school teachers' assessments of a set of sample questions and student answers, give us reason to believe that a fairly precise step-by-step program in French could be designed and accepted. However, there is not now a system of standardization which satisfies any of the groups of teachers.

There are, of course, differences in the way French is taught, in the relative emphasis given to final examinations and to term marks. There are also significant differences in the emphasis given to certain objectives.



In all these areas there appears, however, to be a measure of consistency, with a small percentage choosing to go a route rather far from that of their colleagues. To what extent this is simply a desirable expression of academic freedom and to what extent it is due to inadequate coordination must be answered by more detailed analysis of specific courses. The coordination system for the discipline may well have to be strengthened if the concerns of many teachers regarding variability are to be met, and the concerns of society regarding excessive overlaps between institutions are to be satisfactorily resolved.

#### HISTORY AND HISTOIRE

Year 5 secondary school history and histoire are presented in most schools as Canadian or North American history courses. The organization of the course is often thematic; alternatively, a series of problems may be studied. Neither approach is unexpected since both are suggested in the Ministry of Education guidelines for senior history/histoire. Courses offered in university year 1 are predominantly European survey courses, though most universities offer at least one other type (a few deal with Canadian history).

Instructors appear to be concerned more with the skills developed than content learned, and at both levels they are agreed on the nature of those skills--both general communication skills and skills specific to the analysis and interpretation of historical information. However, instructors at both levels perceived incoming students' competence in these skill areas as very low, and variability in students' background as very great. Since Year 1 university history and histoire courses rarely have prerequisites, it is likely that the members of each university class do not have comparable backgrounds in history. This variability has undoubtedly been more striking since the introduction of the credit system.



Before then, a more uniform structure at secondary school guaranteed some history background from courses taken in grades 9-12, even if the incoming university student had not taken grade 13 history. University instructors can no longer assume that incoming students will have command of a rather uniform body of historical knowledge or even of certain basic historical skills.

The variation in competence and preparation of students entering university histoire courses is increased by two other factors: few year 5 courses contain a prerequisite, and university histoire courses appear to serve a considerable proportion of graduates from Quebec schools, with a different background in histoire from that provided by Ontario secondary schools.

In year 5 history the problem of variability should be less, since 66 percent of the courses required or recommended at least one previous history course, unlike year 5 histoire. Teachers of both history and histoire, however, perceived a great deal of variability in the competence of students in their courses. This perceived variability may explain the low average level of student competence indicated by these instructors.

In both the history and histoire interfaces it is clear that the great variability in the background of students enrolled in year 5 secondary school and year 1 university courses hinders any continuity in the teaching of students moving from one level to the other. The issue is further complicated by a lack of coordination between university and secondary school instructors in the design of curricula. Since history and histoire instructors at all levels are agreed about what is to be taught, it would seem advantageous if they also agreed on what degree of competence should be achieved at each educational level; in this way a continuum in the teaching of history skills

could be developed and gaps and unnecessary duplications could be avoided.

### PHYSICS AND PHYSIQUE

#### THE YEAR 3 SECONDARY SCHOOL TO YEAR 1 COLLEGE INTERFACE

Secondary school students entering college physics courses have a heterogeneous background. Students may have taken year 3 general or year 3 advanced physics courses, or no formal physics at all. A small percentage of students enrolled in college technology programs may have taken year 5 physics. The problem is exacerbated by the absence of Ministry guidelines for year 3 general physics courses. Perhaps inevitably, then, year 3 general Physics and Physique courses had the lowest consistency of content coverage and emphasis from school to school. The year 3 advanced physics and physique courses showed greater consistency of content coverage, but it is from year 3 courses that the colleges receive many of their physics students.

The situation in the colleges compounds the problem. Although most college courses prescribe year 3 physics and a secondary school mathematics, such requirements are often waived. There are a great variety of college physics courses offered; in many instances there appears to be a specific physics course for each technology or technician field offered in a college. Since there are no province-wide curricula, the physics instructor plays a major role in determining the content of the course. Variability in instructors' work and educational backgrounds contributes to the variability in course content. Not surprisingly, year 1 college Physics/Physique courses have a low degree of consistency of content coverage. Related to all these factors, it appears, is the very low rating given by college instructors to the average students' level of achievement at entry to their courses.

It would, indeed, be true to say that the year 3 secondary school to year 1 college interface hardly exists. What interface there is, is primarily one of accommodation, in that students with a wide range of secondary school backgrounds are accepted into college courses. The interface is inefficient, in that it appears as if much of the material which is taught in year 3 is taught again in year 1 college courses. The extent to which a better match between the two levels can be achieved presents both philosophical and practical problems. The philosophical aspects of restricting admission to students who have taken and passed specific courses are beyond the scope of this discussion. Whether such a procedure would produce a better interface, given the wide variety and number of first year physics courses offered in colleges, is a moot question. Certainly, the preparation of updated curriculum guidelines for both year 3 Physics/Physique courses, on the basis of joint consultation between secondary school and college instructors, would be a first step in the improvement of the interface. An agreed core curriculum for year 3 courses would lead to increased consistency in the coverage of appropriate topics in high school, and a correspondingly higher level of student achievement in these core topics on entry to college physics courses. Exclusion from college physics/physique courses of students who did not take year 3 courses probably is not acceptable, but one alternative is to screen students on the basis of formal prerequisites and/or demonstrated mastery of subject matter and then to offer remedial work to those who do not meet appropriate standards.

#### THE YEAR 5 SECONDARY SCHOOL TO YEAR 1 UNIVERSITY INTERFACE

The university-secondary school physics interface is something of a contradiction. On the one hand, year 5 teachers provided descriptions of courses which appeared



to be highly consistent from one school to the next, and expressed relatively high satisfaction with the level of student achievement at entry. An analysis of the percentage of teachers teaching individual topics and of the time allocated to each of 21 major topic areas confirmed the consistency. In addition, the same text was widely used across the schools sampled.

The pattern was somewhat different for the year 5 Physique courses. The teachers generally tended to place more emphasis on mechanics topics in their teaching; but there was greater overall variability in content coverage, and in the entry and exit levels of achievement.

On the other hand year 1 Physics instructors at university perceived great variability in the knowledge possessed by students entering their courses, and expressed a relatively high level of dissatisfaction with their level of competence. They were also unhappy with the mathematical skills displayed by incoming students. Moreover, in universities there appear to be two distinct types of physics courses, those for 'majors' and those for 'others' - a factor to which one may in some degree attribute the only moderate consistency of content coverage that appeared in first year physics courses.

When university physics instructors' expectations were highest, i.e., in topics which they perceived as being widely taught in the secondary schools, their satisfaction with the student achievement level at entry tends to be lowest and the discrepancy between achievement level perceived by secondary school teachers and university instructors tends to be greatest. Although the university year 1 Physique courses tended to be French-instruction versions of year 1 Physics courses, the emphasis on mechanics in the secondary schools no doubt facilitated the transition for some French-speaking students.



There appear to be no real barriers to an improved relationship between year 5 and university year 1 Physics/Physique because the students who are taking year 5 Physics or Physique, for the most part, are students with specific post-secondary aspirations who anticipate that they will be taking first year physics at university. The incidence of students taking major or other physics courses in year 1 university without appropriate year 5 physics requirements was low. An analysis of the perceived student achievement level in major and other courses indicates that there are de facto prerequisites in all these courses in most universities. First year university courses in physics and physique do not, therefore, face the problem that perplexes other subjects, of having to accommodate a substantial number of students who wish to study the discipline with appropriate secondary school preparation. It probably would be useful, however, if the universities were more specific about defining the prerequisites for their physics/physique offerings.

A number of steps could be taken to improve the university secondary school interface in physics and physique. The first issue--the nature of the body of knowledge required for the year 5 courses--may not be as easily resolved as one might think: the variance in the content of university physics and physique courses sampled in the study makes it obvious that the year 5 physics courses could not assure some level of competence in year 5 students for all the topics covered in year 1 university physics courses.

Second, it appears that the current year 5 curriculum guideline covers too much ground to ensure the level of competency which the universities would like. Although the year 5 teachers appear to cover the greater part of the material outlined in the Ministry of Education guideline, it is conceded that many of these topics are

not covered at the depth desirable for entry to a university physics course. There seems to be a need, therefore, for a narrowing of the core content in year 5 Physics and Physique and for more specific agreement about the level of difficulty at which the year 5 teachers should cover the topics in the core. There seems to be some resentment in the secondary schools about the fact that the Ministry of Education has not made any steps to update the curriculum guideline for year 5 Physics since 1966. Some department heads interviewed believed the Ministry had abdicated its responsibilities here.

Third, the mathematical skill which students need to master the physics content in year 5 and first year university physics constitute an area of ambiguity. Although there was a fairly high degree of agreement about what mathematical skills are necessary, these skills need to be defined carefully by appropriate university and secondary school personnel. The matter of exactly where and how the physics student is to acquire these necessary mathematical skills also needs to be resolved. The year 5 Physics and Physique teachers indicated that they did not specifically teach these skills except in so far as they were needed to solve particular problems in their courses. Coordination, therefore, is needed between physics and mathematics in the secondary schools to ensure that students who are taking physics do get the appropriate mathematical training.

Fourth, the level of competence achieved by typical students entering year 1 university Physics and Physique courses needs more accurate identification. University professors tend to assume that this is low, when in fact tests administered by Project II of the Interface study indicate that in some instances students do have a reasonable level of competency. The natural tendency to look to the low quarter of the entering students to

assess the average level of achievement probably means that that level in year 1 university Physics/Physique courses is being underestimated by the university instructors.

#### MATHEMATICS AND MATHEMATIQUES

##### THE YEAR 4 SECONDARY SCHOOL TO YEAR 1 COLLEGE INTERFACE

The transition of students from year 4 secondary school to mathematics courses in the colleges is confounded by a variety of factors. Graduates of year 4 advanced, general, technical and business mathematics courses (as well as a small percentage of year 5 Mathematics students) may be found in the many, varied first-semester college mathematics courses. The year 4 general Mathematics courses studied were characterized by variability in topics and emphases, with few topics being taught by a majority of teachers. Basic Algebra received the greatest emphasis, with Basic Mathematics and basic topics in quadratic, exponential and logarithmic functions also given some attention. The year 4 advanced courses were taught with much greater consistency. Twenty-two of the 36 topics defined by the Ministry as "core" were taught by all instructors in our sample and a greater number of instructors than in year 4 general Mathematics covered individual topics in each topic area. The major content areas covered included quadratic and trigonometric functions, and analytical geometry. Both year 4 general and advanced Mathematiques were more consistently taught than the equivalent mathematics courses, although the general pattern was very similar.

The year 1 college Business and Technology Mathematics courses which primarily receive year 4 graduates also exhibited wide variability in content and emphasis. The two groups of courses differ considerably, Technology Mathematics being more concerned with the preparation of students for advanced levels of theoretical and applied mathematical work.



The primary emphasis in college business courses was on arithmetic although there was some attention given to algebraic topics. College technology courses focussed mainly on Basic Algebra and the various kinds of functions, with considerable weight placed on trigonometry and some basic arithmetic. There was considerable variation from course to course in the other topics that were taught. The content and emphasis of our small sample of Mathematiques courses (all in the Technology area) were essentially the same as the English equivalents; the instructors were equally critical of incoming students' preparation in basic mathematical skills.

Criticism centred on the fact that graduates of 4 general courses were perceived as unable to do Basic Mathematics. Upgrading opportunities as well as review of basic concepts in elementary arithmetic and algebra were provided by the colleges. This was the case in both Technology and Business Mathematics courses, even though 84 percent of the Technology courses required successful completion of year 4 mathematics (only 43 percent of Business Mathematics courses specified prerequisites at the year 4 secondary level).

Information concerning the amount of time allocated to specific topics, the amount of time spent in review and coverage of topics combines to give the impression that Basic Mathematics does not appear to have been taught adequately by the end of year 4. College instructors perceived a lower level of competence among their incoming students than year 4 teachers considered their students generally achieved. There were some marked differences in the responses, however. Year 4 advanced teachers and college technology instructors indicated that at entry into their courses, students had achieved greater competence than year 4 general and college business instructors indicated for their students.



There are many explanations for college instructors' perceptions of students' inadequacies. For example, there are topics which formed part of the core of year 4 advanced Mathematics and Mathematiques courses, yet were not included as the core in year 4 general courses; college instructors expected a certain level of competence among all incoming students in specific topic areas (for instance, in analytic geometry, they might expect knowledge of derivation of various forms of the equation, and of identifying, constructing and graphing a straight line) and they must inevitably be disappointed since these key topics are not included in the year 4 general core. Project II analyses of data based on the testing of year 4 students in fundamental arithmetic operations, percentages, generalized arithmetic, working with algebraic expressions, linear equations and problems involving one unknown revealed minor gaps in 4 of these 5 areas. Other topics are identified as core topics in guidelines but were not taught. For example, "quadratic equations" was a core item in the year 4 general course, but was taught by only 32 percent of the teachers.

It is perhaps more difficult to understand why students' competence is perceived as inadequate in topics taught by most teachers. The 5 areas of Basic Arithmetic and Algebra mentioned above were taught by at least 58 percent of year 4 teachers. In addition, these topics formed part of mathematics courses before year 4.

It is clear that the topics mentioned above are so basic that attention should be given to the discrepancies revealed.

#### THE YEAR 5 SECONDARY SCHOOL TO YEAR 1 UNIVERSITY INTERFACE

Although 75 percent of university mathematics courses in Calculus, Algebra, Calculus and Linear Algebra, and Basic Mathematics required successful completion of year 5

secondary school mathematics course(s), information from instructors at both levels indicated that there was considerable duplication of material. This is particularly true in Calculus, where year 5 teachers allocated approximately 40 percent of their time to university year 1 topics, and university instructors allocated about 30 percent of their time to year 5 topics. The phenomenon occurred to a lesser extent for algebra courses: in 3 of the 5 studied between 25 and 45 percent of time was spent on year 5 topics, although year 5 teachers allocated less than 5 percent of the time to university topics. Some emphasis was given to year 5 topics by most university instructors; for example, an average of 30 percent of class time was given over to Basic Mathematics in Calculus courses and between one-quarter and one-half of class time in courses combining Calculus and Linear Algebra.

Year 5 Mathematiques courses showed less variability than their English counterparts. This greater degree of uniformity was achieved by a closer adherence to Ministry of Education guidelines and greater use of final examinations.

University instructors in general, including the very small sample of mathematiques instructors were critical of general level of preparation of incoming students in basic mathematics skills.

Calculus instructors in particular were dissatisfied, especially with the 4 topic area identified as gaps by the Project II testing program. Some dissatisfaction was also evidenced for 4 of the 6 topic areas identified there as duplications. This might be explained by the fact that these topic areas relate to basic differentiation and are considered to be the "basic arithmetic" of Calculus. Hence, the desired level of entry competence is likely to be high.

Except for year 4 general Mathematics and year 5 Calculus/Calcul there was considerable consistency in the teaching of mathematics and mathématiques at the senior secondary school level across the province. It was not then, surprising that the Project II mathematics testing program found little evidence of declining student achievement in mathematics over the past five years. Nevertheless, diversity in what is taught does appear to be increasing and there are gaps and duplications across the interface that require coordination.

## FRANÇAIS

### THE YEAR 4 SECONDARY SCHOOL TO YEAR 1 COLLEGE INTERFACE

Only one college offers opportunities for French-speaking students to take entire programs with French as the language of instruction. Two others offer limited opportunities.

The majority of entering students come from year 4 générale or avancé français courses in Ontario's French or "mixed" secondary schools. While there is greater attention given to language instruction in these year 4 courses than in their English counterparts, the criticisms by college instructors regarding the preparation of incoming students was just as extensive. There was some confusion in the data regarding the preparation of students prior to entry into the year 4 course; while the general impression was one of satisfaction there were many criticisms and concerns about student preparation in specific areas particularly with regard to language development.

The français courses offered in the college tend to be very flexible and students are normally tested and then placed in a program that is consistent with their competence. While this approach deals quite effectively with the



accommodation of students with a wide range of backgrounds in français, the college instructors would prefer to receive students who possess substantially higher levels of competence than incoming students at the present time.

#### THE YEAR 5 SECONDARY SCHOOL TO YEAR 1 UNIVERSITY INTERFACE

The majority of students enrolled in year 1 university français courses have taken the subject in their last year of secondary school or its equivalent. In Ontario, Ministry of Education guidelines are not a major source of direction for year 5 teachers nor is there great consistency in the use of particular textbooks. It is, therefore, not surprising to find quite different emphases from course to course. However, instruction in language development is usually the basic thrust (60 percent of most courses) with instruction in literature ranging from 25 to 45 percent of class time. The year 5 teachers were more critical of the preparation of incoming students than were the year 4 teachers. Although the main criticisms were related to language skills most instructors indicated a preference for a higher level of student competence at entry to their courses in all areas.

The six university français instructors almost unanimously declared that first year students' preparation was weak in the area of writing and ability to undertake literary study. Many more français courses offered at the university level dealt specifically with language development than was the case for English courses. In these courses (often after a pretest) a student is usually provided with an opportunity to upgrade his language skills. The concept of "remediation" is much more acceptable to the français departments of universities than to English departments.

In general, Year 1 français instructors at universities perceive their incoming students as being ill-prepared.

Nevertheless it should be pointed out that schools, courses, and programs for French-speaking students in Ontario are relatively new. This newness means the necessary period of trial and error in course and program development has only begun. More time is required before some stability can be achieved. Also there is the de facto requirement that French-speaking students must be functionally bilingual in Ontario; this places an added burden on their time and efforts.

## TRENDS

### ENROLMENTS

Although enrolments at both secondary and post-secondary institutions have grown dramatically since the early 1960's, the growth rate at colleges and universities has slowed down after reaching a peak in the early 1970's. At secondary schools enrolments have dipped and it is anticipated that the decline will continue. Surprisingly, perhaps, there has been a decline in the holding power of secondary schools up to the year 4 level since the introduction of the credit system.

The pattern of changing enrolments over time in specific courses at the secondary and university level tends to be substantiated by the reasons for course selection given in an earlier study (Semestering the Secondary School, King et al., OISE, 1975). Mathematics and science enrolments have remained quite stable; students select such courses because they are necessary for future career and study plans. Most students take English up to year 4 for the same reason; however, until just recently English year 5 was not a prerequisite for many university programs, and this is reflected in a slight decline in year 5 English enrolments. Students select other subjects, such as French, history and home economics, in part because of interest. "Interest" subjects such as French and history which may involve a high risk of failure for students have experienced a decline in enrolments; "interest" subjects such as home economics and theatre arts which students perceive as low risk, have increased in enrolment.

College enrolments in all program areas have generally increased steadily since 1970. The introduction of nursing and related programs in 1973 increased enrolments greatly in the health sciences area. An increase in two-year programs at colleges generally is explained in part by



consolidation of some three-year programs into two.

Program enrolments at both colleges and universities appear to be influenced to some extent by the economic situation and the extent to which job opportunities are available. Thus proportionate enrolments in Arts and Science at universities have decreased since 1972; it is more difficult for the graduate with a general B.A. to obtain work. Other factors obviously contribute as well. Enrolments in the health professions have not grown as rapidly as in other fields, perhaps because of more restrictive admissions policies.

#### STUDENT ACHIEVEMENT

At secondary schools, since the abolition of the Grade 13 Departmental Examinations, year 5 failure rates have decreased and the proportion of students receiving higher marks has increased. This pattern may also be detected in year 4 advanced courses; however, in the earlier years of secondary school and in year 4 general courses, failure rates have remained at pre-credit-system levels and the proportion of higher marks assigned has changed very little. For students enrolling in mainly general courses in year 1 of secondary school the likelihood of dropping out before receiving a secondary school graduation diploma (SSGD) is very high and the likelihood of continuing to college is very low.

Although courses in some universities show a tendency toward inflation of marks, the pattern is not consistent across all universities. In addition, the variability in mark patterns at university reflects recent pressures in some universities to introduce evaluation policies to control marks inflation. In some university courses failure rates have declined over the past ten years; the proportion of students receiving A's has increased.

Attempts to obtain information concerning student achievement in particular courses in the colleges were unsuccessful, owing to the great variety of procedures used to evaluate students and the almost complete absence of summarized data. However, course supervisors who were interviewed noted that although student attitude and motivation had improved, mathematics and English skills had declined.

The assignment of advanced credits or standing to students rarely takes place in universities, but occurs extensively in the colleges. College students may obtain credit for equivalent courses taken in year 5, another college or university. If enough advanced credits are obtained the student is permitted to enter a program beyond the first semester. The number of college students receiving advanced credits has increased from 3.1 percent in 1970 to 9.7 percent in 1974. Colleges are now perceived as a legitimate post-secondary alternative, and more students with year 5 credits are applying.

#### ADMISSION POLICIES

Although the basic admission requirements for entry into post-secondary college programs is the SSGD, 'refinements' have been added where programs are oversubscribed. These refinements vary from college to college but include the following: raising the percentage required for admission to certain subjects; psychological and aptitude testing; group and/or personal interviews; and priority given to students residing in the community served by the college.

Admission requirements at universities have been influenced by changes in the secondary school system. In 1965, the minimum requirement was 60 percent on 9 examination papers; many secondary school subjects were required, not optional. As the number of credits required for a SSHGD decreased, entrance requirements at universities were altered and became less subject-specific. English was dropped as a

prerequisite for many programs by 1974, although it has recently been reinstated in a number of them. Universities are tending to be more specific regarding the year 5 courses required for entry into particular programs.

Remedial courses are normally not labelled as such at colleges; however, there is a remedial component of many first-semester courses. Although there is concern about the level of competence of incoming students at universities, only a few offer remedial courses. Every university surveyed does, nonetheless, provide opportunities for assistance to students with academic problems.

#### COORDINATING MECHANISMS

On the basis of two surveys (one formal and covering nearly 2,000 persons, the other informal but more detailed and specialized) administered to instructors at the secondary school, college and university levels, two categories of coordinating mechanisms were developed. One category included mechanisms for coordination within each discipline; the other, mechanisms for coordination across institutional levels. "Coordination" was defined in the context of such activities as choosing appropriate methods and materials for study and determining standards to be achieved by students.

The most striking findings from this analysis were: (1) the vast majority of the mechanisms mentioned were voluntary and informal; (2) the average number of mechanisms suggested per instructor was 1.2 (covering both discipline-specific and inter-institutional areas) and (3) no single mechanism was mentioned by as many as 10 percent of the respondents.

While the guidance departments of the schools and the liaison and promotion departments of the universities were most frequently mentioned, their influence on the system must be questioned if these departments are mentioned by less than



10 percent of those responding. The coordination done by these departments, however valuable it may be, is not of much comfort to those concerned with curriculum planning and student evaluation, since these are not the functions of such departments.

Indeed, if one takes out those formal units in schools and universities which provide general liaison, there is essentially nothing left of a formal coordinating system. What is done, is done by modestly financed voluntary organizations such as the science or mathematics teachers associations and the remnants of consultant and advisory teams from the Ministry of Education and Boards of Education.

From the interviews it is clear that some of these associations have made enormous contributions in relation to their resources. However, if one assumes that coordination must involve each teacher, then the present coordination system must be judged haphazard and inefficient.

The surveys showed a system both too limited in total resources and too diffuse to be functional. Yet it by no means follows that a swing to a strongly centralized and potentially bureaucratic coordination system is necessary. A centralized coordination system can be unresponsive to individual and community needs. Although there is evidence of competent work being done at the level of school, board and subject association, there is a clear need for a more efficient system of coordination which still has the capacity to support some diversity of effort.

#### CONCLUDING STATEMENT

Much of our data may be inexact because they are dependent on perceptions of individual educators. These perceptions have undoubtedly been distorted in some instances by the climate of educational criticism that exists in Ontario at the present time. However, we have combined this

perceptual information with concrete information from reliable sources to produce findings in which we have considerable confidence.

- (1) The colleges successfully make accommodation for the great variability in the preparation of their incoming students. This variability of preparation is a natural concomitant of the credit system and the "open door" policy of the colleges.
- (2) Inflation of marks has not been substantial in years 1 to 4 in secondary school. An increase in failure rates precipitated by the perceived necessity to "improve standards" could reduce even further the rather shaky holding power of the secondary schools, especially for the general level student.
- (3) Inflation of marks has occurred to some extent in year 5 secondary school but is manifested in an increase in the number of higher marks being assigned rather than declining failure rates. Failure rates declined substantially with the removal of external examinations but have remained quite stable for the past 7 years. The balance between university candidates and university capacity is quite tenuous at the present and a tightening of "standards" (translated in practice to mean higher failure rates) could empty classrooms in some universities.
- (4) Inflation of marks has occurred in some universities: substantial variations in student mark distributions over time were found within and across universities.
- (5) There is evidence of diversity in what is being taught in secondary school courses and the level of competence at which teaching is aimed. Diversity is greatest in general level courses and least in such areas as year 5 mathematics and physics. This

diversity has led to "the better students being better than ever" but also to increased heterogeneity in the composition of classes at both the secondary and post-secondary levels. This heterogeneity combined with flexible course admission policies has made the task of the teacher more difficult and his criticisms more severe.

- (6) There is need for a thorough evaluation of the current status of educational opportunities for French-speaking students in secondary and post-secondary institutions in Ontario.
- (7) Subject coordination across institutions and across institutional levels at the interface is almost non-existent. Although in many instances effective courses have been developed, this lack of coordination has created uncertainty and discontent among educators.

Clearly, problems exist which cannot be resolved by applying "band-aid" solutions. In response to current innovations and Ministry of Education policy changes some secondary school students have been subjected to major educational changes for five consecutive years. A comprehensive, systematically designed plan with precise long-term goals is now necessary.





CHAPTER V  
INTERPROJECT ANALYSIS  
PROGRAMS AND STUDENT ACHIEVEMENT AT THE SECONDARY/  
POST-SECONDARY INTERFACE  
H.H. RUSSELL, ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

1. INTRODUCTION

The purpose of Interproject Analysis is to combine the data from Project II on the nature of students and from Project III on the nature of programs in an effort to identify gaps, duplications or other anomalies which may hamper the effectiveness of the educational system, and to attempt to discover how these anomalies, if any, are related to general public anxiety and to various features of the Ontario system.

Public criticism of both secondary and post-secondary education is not new; in fact, serious criticism of all levels of education has been a continuing phenomenon over a period of decades and even centuries. Current criticism seems to be especially acute in Ontario just as it is in the United States and Europe.

The combination of data from Projects II and III is intended to clarify the ways in which the program characteristics of secondary and post-secondary levels are related to both student performance and the expectations of student performance that are held by instructors from the two levels. However reasonable this sounds, the complexity of the task, when it is attempted on a large scale, is of monstrous proportions. Consequently, the present group of Interface Studies is in many respects a pioneering effort.

The one educational researcher who has provided the greatest amount of information about Ontario's secondary and post-secondary programs and students is W. G. Fleming. His seven-volume series Ontario's Educative Society and his review of highlights in Education: Ontario's Preoccupation speak to most of the issues of current interest to the Interface Studies. His discussion of the competitive climate in Ontario society through to the 1930s and beyond interacts with his discussion of the traditionalist and progressive philosophical positions of leading educators to show the kinds of balancing which were in effect during successive periods of time.

Two of Fleming's themes are of special significance to the present study. One is the apparent swing toward progressivism as evidenced by the abolition of province-wide examinations, some decentralization of curriculum, and the introduction of the credit system into Ontario secondary schools. The second is the change in composition of the student population in secondary schools and in universities and colleges which has resulted from rapid expansion of the services offered to teenagers.

Because of some highly visible opposition to the apparently progressive credit system, the Ministry of Education commissioned the HSI studies in 1973. In summarizing the findings of those studies, Fleming reported widespread professional and public endorsement of the central idea of flexible course selection. He also found that stability of course and program selection among students was maintained in spite of their freedom to make dramatic changes if they so wished. Fleming and his colleagues also discovered considerable stability in teaching methods, course content and within-school organization. Whether or not there are causal relationships between the swing toward flexible programs and the phenomenal expansion of educational services, it is reasonable to suggest that the latter factor alone stands out as the single most important change



of the last quarter-century. Fleming reports a rapid increase in the number of students in secondary schools. The change between the 1945-46 school year and the 1971-72 school year is from 120,000 to 575,000. This is a fivefold increase in gross numbers of students and a change in proportion of secondary school aged students from about 40% to about 80% of all potential students. About half of our current secondary school students would not have been students at all even fifteen years ago. The schools have been required to cope with increased numbers of the type of student they have traditionally served, and as well they have had to provide service - and perhaps a new kind of service - to as many students again who in the past would not have expected the service at all. There have been profound ramifications to this change, the first and most obvious of which has been the cost to the community, and the second the change in what can reasonably be expected of the average student.

The dramatic changes in numbers and proportions evidenced in the secondary schools are even more pronounced at the post-secondary level. Again according to Fleming, the number of post-secondary students attending Colleges of Applied Arts and Technology and universities stands at about 160,000 in recent years, whereas it was only 19,000 in 1952-53. This is an eightfold increase in numbers, and its effect on the composition of the student body is not clearly known. When the general public, or secondary or post-secondary teachers, fail to take into account the rapid and substantial changes in the composition of the student population, there will indeed be expectations of students which are unrealistic. The data which form the basis for this group of studies suggest that this is precisely what has happened in Ontario, and data reported in the studies mentioned in Chapter Two indicate that other national jurisdictions are encountering very similar problems.

## 2. STUDY PLAN

There are two basic panels of data for the Interproject Analysis. One pertains to student performance at the secondary-post-secondary interface in English, Mathematics, Physics, French, Français and Anglais; the other pertains to a description of programs at the interface in these same subject areas. The data were gathered according to a plan aimed at assuring a sample highly representative of the entire province of Ontario. With few exceptions, all Grade Twelve and Grade Thirteen students in Ontario had a chance to be selected for testing in connection with this study; thus virtually all of these students are represented in the aggregated provincial data. The sampling plan which yielded the representative group of students depended on the selection of a sample of schools, and it was this same sample of schools that was used for the selection of the sample of secondary school programs to be studied in the Project III (Nature of Programs) study. This kind of double utilization of a sample placed an added burden on the schools which were selected, but on the other hand it has made possible the analysis of both panels of data on a basis that relates student performance to the courses actually taken by the students, rather than to some provincial norm generated by an independent sample of schools.

The tests chosen to measure student performance were considered the best available by a highly select group of experts from each discipline at both secondary and post-secondary levels. For Grade Thirteen Mathematics and Physics, the choices were particular forms of, respectively, the Ontario Mathematics Achievement Test and the Ontario Physics Achievement Test. Since no suitable test was available of the kind that was needed for Grade Twelve Mathematics, a new test was developed. In English, a writing test was developed, and a multiple-choice language achievement test was constructed of sections of forms of the Canadian Scholastic Aptitude Test, the Canadian English Language

Achievement Test and the Canadian Test of English Language. The battery of tests used for French was a very slightly modified version of the tests used with a similar population in the International Study of Educational Achievement. In the Francophone schools, the tests of Mathematics and Physics were identical with the ones used in Anglophone schools, except for language; this was also true of the writing test. First language testing in these schools was carried out by means of a test consisting of sections of the Test de français, langue d'enseignement; the test of second language was composed of a reading comprehension section drawn from the Michigan Test of English Language Proficiency, and a newly constructed section testing writing proficiency.

For each of these tests two Test Appraisal Inventories were developed, designed to gather respectively the opinions of secondary and post-secondary teachers about the tests themselves and about their own coverage of the material tested in the various test items and sections. In responding to the inventories, teachers were asked to keep in mind the courses they were teaching or would be teaching to the students being tested. In one sense these inventories are a modification of the "opportunity to learn" index that has emerged recently as a useful variable in large-scale studies of student achievement.

The basic instruments for gathering program description data are called Course Description Questionnaires; again they were designed to gather information from secondary and post-secondary instructors covering the same courses as above. The Course Description Questionnaires, in contrast with the Test Appraisal Inventories, were developed by committees of subject area specialists; the development of these questionnaires by Project III was done independently of the test selection and the development of the Test Appraisal Inventories by Project II. Thus the Project II and Project III data-gathering activities were to yield two



panels of data, with the degree of merging of the two panels dependent on the possibilities of mapping test items and groups of items onto topics and vice versa.

The mapping of Project II test items onto Project III topics was reasonably effective in both Mathematics and Physics; in each of these cases the match between the program and the tests was reasonably good. However, this map was more complicated in the area of language, and here the merging of data is in some respects of a very tentative nature. The merging of data in all of the subject areas was done by means of Topic Tables (see Appendix 4C to Chapter Four), each of which included the data from Project III on a particular topic and the data from Project II on test items related to the topic. On the basis of analysis of the completed Topic Tables for the whole range of topics and test items, possible gaps and duplications and other anomalies emerged. The next step was to prepare summary tables which included the main relevant information from the Topic Tables and provided indications as to whether topics suffered from any of these anomalies.

### 3. THE DATA

The Project III data of greatest interest to this analysis are the assessments by secondary teachers of the average level of competence of their students on various topics or objectives at the end of Grade Twelve or Grade Thirteen, and the corresponding assessments by post-secondary teachers of the competence of their incoming students. In every subject area examined, there was a consistent and sizeable discrepancy between these assessments, with post-secondary teachers reporting a much lower level of competence than secondary teachers. Logically, one would expect any discrepancy to work in the opposite direction, at least for the Grade Thirteen-university interface, since those students entering university from Grade Thirteen may be assumed to be, on the average, somewhat more capable than those not

proceeding to further studies. (This assumption is strongly confirmed by analyses of score distributions for groups of students differentiated according to grade level and future educational plans - see the Project II report.)

The anomaly can be resolved for practical purposes by ranking the estimates of secondary teachers separately from those of post-secondary teachers, or merely introducing a common discrepancy factor. In either case, the data then reveal high consistency, and prove to be useful in the main analyses. It is interesting, though not surprising, that the correspondence between ratings and student performance is closer in the case of secondary teachers than for post-secondary teachers.

Why the discrepancies arise is not so easily resolved. Perhaps it is a lag on the part of university instructors in accommodating to the changes in the composition of the student body discussed in Chapter Two - changes which are both more pronounced and more recent in universities and community colleges than in secondary schools. Or it may be nothing more than the fact that the two sets of teachers are responding from different contexts - i.e., that knowledge which in contrast with that expected in lower secondary grades appears to be at a high level looks quite different when examined in the context of advanced university work. The Project III staff found some evidence that this latter explanation is at least part of the answer: secondary and post-secondary teachers, presented with the same test questions and asked to rate them according to the level of knowledge they demanded, differed somewhat in those ratings. However, these differences were not so great as the differences evidenced in the topic ratings.

Student performance data from Project II presented one problem in particular - that of deciding what constituted "acceptable" student performance on a test or a test item. The decisions were necessarily highly arbitrary, and varied

from subject to subject in accordance with the difficulty of the tests and the level of the students.

Project II also provided Test Appraisal Inventory data for each test. For Mathematics, Physics, and some parts of the language tests, secondary teachers were asked to classify each test item according to whether its content should have been known by students entering their courses, should have been learned by all students in the course, should have been learned by some students in the course, or was not expected to have been learned before or during the course. Post-secondary teachers rated the items as old knowledge, course content, or other. This method of classification could not be easily applied to most parts of the language tests. Therefore, more general questions were asked about the tests, about the amount of emphasis the teachers placed in their teaching on the development of the particular skills required to respond to the test items, and about the proportion of students who should be competent in these skills.

### 3.1 MATHEMATICS - GRADE THIRTEEN

In the case of Mathematics at the Grade Thirteen-university interface, there must be some caution introduced in making historical comparisons, because of curriculum changes. In spite of this, the evidence is strong that student performance on the test employed has been relatively stable over the eight years since the original administration of the test. In fact, scores for university-bound students were slightly higher than for the 1968 administration. It appears, therefore, that present curriculum problems in Mathematics would not be solved by returning to programs or conditions of the earlier era. It may be comforting to teachers and school authorities to know that the widespread anxiety about declines in student performance in this field is generally unfounded. On the other hand, however, the data indicate a number of problems, the



resolution of which could be very helpful to our students.

The test employed in this study is not ideal for measuring student achievement in Ontario Grade Thirteen Mathematics courses. One-quarter of the test items deal with material covered in the curriculum only before the Grade Thirteen level, and it could be argued that treatment of such material is inappropriate in a test at this level. In the field of relations and functions coverage is also given to material treated both before and during Grade Thirteen. However, particularly in view of the number of cases in which such items revealed inadequate student knowledge in the present study, it does in fact seem important to test this sort of material.

A more serious problem with this test is its lack of coverage of a number of topics dealt with in Calculus, and of the entire content of Algebra. These areas should certainly be dealt with in any future standardized testing program. It would also be wise, in view of differential enrolment in these courses, to use separate tests for each course. In this study, for example, it was not possible to test students enrolled in only one of Calculus and Relations and Functions, since the test material could not be separated.

In Mathematics at this level, a number of gaps were pointed out by items on which the student success rate was low, and for which a sizeable percentage of university teachers expected incoming students to have a knowledge of the content. These gaps were evidenced in the following topics:

- (a) I-1: Function as a mapping (1 item of 2)
- (b) I-2: Inverse of a function (1 item of 1)
- (c) I-3: Graphs and properties of second degree relations using previously known skills (1 item of 4)
- (d) I-8: Intersection of conics and conics (1 item of 2)



- (e) I-10: Standard trigonometric formulae and applications (4 items of 4)
- (f) Pre-Grade Thirteen material (3 items of 9)

Duplications were indicated by items where the success rate was high, and where significant numbers of university teachers stated that they retaught the topic or performed (apparently unnecessary) review on it. Duplications occurred in the following topics:

- (a) I-6: Applications (of equations of conics in non-standard positions) (1 item of 1)
- (b) II-2: Rate of change: slopes, secants, tangents (2 items of 2)
- (c) II-3: Derivatives of powers, products, and quotients (1 item of 1)
- (d) II-8: Maxima and minima problems (1 item of 1)
- (e) II-28: Derivatives of elementary functions (1 item of 1)
- (f) Pre-Grade Thirteen material (1 item of 9)

It is important that most of the duplications involve calculus items, and most of the gaps are related to topics in relations and functions. It is perhaps even more important that almost all gaps could be traced back to levels before Grade Thirteen. In these cases, the item content had been considered old knowledge on Grade Thirteen entry by most teachers, and had not been widely reviewed or retaught.

Some approaches at the secondary level to achieving more efficient learning in mathematics suggested by this analysis, then, are a greater emphasis at pre-Grade Thirteen levels on mastery of those skills needed in the senior courses; a more careful examination by Grade Thirteen

teachers of the extent of students' previous knowledge; and more effort by these teachers to remedy any existing gaps in basic knowledge. At the university level, teachers might safely put more confidence in their students' knowledge of calculus, and use the time saved in this way in more extensive review and teaching of those areas in which student competence appears to be lower.

### 3.2 MATHEMATICS - GRADE TWELVE

In general, the performance of students on the test constructed for use in measuring mathematical skills in Grade Twelve supports the usual complaint of CAAT teachers that their incoming students do not possess the degree of skill they should have in doing basic arithmetic and algebra. In certain cases, teachers at the college level appeared to expect more than a reasonable amount of their incoming students, many of whom would not have studied Mathematics at the Grade Twelve level (although it should be pointed out that Grade Twelve Mathematics is a prerequisite for technical courses at the CAATs, and teachers of such courses are justified in expecting more knowledge of their students). But much more often these students appeared not to have mastered material taught to them in the earlier years of secondary school, when all or almost all of them were still enrolled in Mathematics courses. The situation is more serious than the list of gaps resulting from this Interproject Analysis indicates, since the sample of students included many who planned to continue their secondary studies, presumably with the aim of eventually attending university. Project II data indicate that these are on the average the more able students, and that the performance of those students making the move from Grade Twelve into the CAATs was somewhat below the overall performance reported here (see Project II report).

The distribution of gaps over the general topics tested was:

- (a) I: Basic Arithmetic - total of 6 items;  
1 minor gap, 2 major gaps.
- (b) III: Basic Algebra - total of 19 items;  
4 minor gaps, 4 major gaps.
- (c) IV: Quadratic Functions and Equations -  
total of 2 items; 2 major gaps.
- (d) V: Exponential and Logarithmic Functions -  
total of 4 items; 1 minor gap, 2 major  
gaps.
- (e) VII: Analytic Geometry and Vectors - total  
of 4 items; 1 major gap.
- (f) Topic not listed - total of 1 item, 1  
major gap.

The general impression given by the comparison of performance data with data on teacher expectations, even for this larger group containing many students more advanced than those going on to CAATs, is discouraging. There was no topic for which all related items were answered satisfactorily by the students, although the situation approached the satisfactory for a few. In three topics, some or all of the gaps can be attributed to overly high expectations at the CAAT level that students will be familiar with material which is not widely taught before Grade Twelve; our assumption is that a significant number of CAAT entrants will not have continued their mathematical studies to this level (except, as noted above, in the case of technical courses). In most topics, however, the problems can confidently be assessed as the result of inadequate learning in the earlier grades of secondary school. It is disturbing that in many cases the skills have not been given adequate attention in the form of review in Grade Twelve in spite of the clear deficiencies in student knowledge. (As noted above, most of the gaps found at the Grade Thirteen level in Mathematics could also be traced back to previous years, where material was not properly mastered; again the teachers of the courses in the final secondary year assumed that their students knew this



material and often did not review it.)

Remedial action could be taken at all three levels. In the earlier secondary years, more rigour is required to make sure that students have some understanding of how to apply the skills they are taught which they will need at higher levels. Grade Twelve teachers should spend more time reviewing these skills and assuring that students can use them competently. CAAT teachers should resign themselves to the fact that, except possibly for those entering technical courses, incoming students will have an imperfect knowledge of exponents and quadratic equations in particular. If the students are known to be competent in the more basic areas, these teachers will require much less time for review and can use the time saved to cover these two problem areas and to proceed to more difficult work. An alternative, of course, is to require all secondary students planning to enter community colleges to carry their enrolment in mathematics courses to the Grade Twelve level. Presumably, given the other remedial possibilities discussed above, they would then be skilled in exponents and quadratic equations as well, and would provide the CAAT teachers with even more time for new work.

### 3.3 PHYSICS

In contrast to the situation in Grade Thirteen Mathematics, where performance on the test used remained relatively stable from 1968 to 1976, Physics showed something of a decline. Between 1970, when the test was first used, and the present administration, the scores for Grade Thirteen students planning post-secondary education dropped an average of three to four points out of 60. The same cautions must be used here as in the case of Mathematics in making historical comparisons, but a problem is certainly indicated; its causes are unclear. One possibility is that the decline results from a decrease in the time allotted to Physics classes.

Of the 21 general topics included in the list used in Project III, the standard Grade Thirteen physics course deals to at least a limited extent with 13, frequently omitting a number of individual topics from a section. The Project II test contains items related to 11 of these 13 general topics, omitting only Electricity and Magnetism and Atomic Structure. Its 60 items touch on 38 of the 60 individual topics included in the course under these 11 general headings.

On historical evidence, a somewhat arbitrary scale was established for item results. Using this scale, student performance was very good on five items, good on seven, adequate on 15, poor on 26, and very poor on seven.

These judgments of item results must, of course, be modified by a number of factors. A poor success rate on an item whose content has not been taught to many students means something quite different from a similar result on content taught to everyone. Student performance on an item whose content most university teachers expect them to know is more crucial than on one whose content is not required knowledge on admission to a first year university course. The data were therefore examined with a number of such factors in mind.

It was found that the problem of duplication - of material already known by the student being taught to him/her at the university level as new - was very rare, to judge by the test results. In only three cases was item content widely taught as new at that level when student performance on the item was good or very good.

A substantial number of items, however, suggested the existence of gaps between student knowledge on admission to the university and teacher expectations of the knowledge of incoming students. There appeared to be four different kinds of gaps, scattered over all topics tested. In the

first case university teachers expected students to have command of material which was given little emphasis at the lower level in compliance with the Ministry of Education guidelines for the course. In the second, even though these guidelines recommended major emphasis for a particular topic, 20% or more of secondary teachers did not cover the content of the relevant items with all of their students. In the third, Grade Thirteen teachers assumed a much higher level of previous knowledge from their entering students than was the case, if one may judge by the fact that students were often unable to handle test items whose content was described by secondary teachers as "old knowledge". The fourth and largest group of problem items, however, dealt with material widely taught at the Grade Thirteen level, but whose content had not been mastered by students even though the guidelines suggested that the topic receive major emphasis.

For Physics, the distribution of items suggesting gaps was as follows:

- (a) 1: Measurement (5 of 6 items)
- (b) 2: Functions (2 of 3 items)
- (c) 3: Motion (Kinematics) (12 of 18 items)
- (d) 4: Newton's Laws of Motion - Dynamics of a Particle (5 of 7 items)
- (e) 7: Gravity - Near the Earth's Surface (4 of 4 items)
- (f) 8: Universal Gravitation (2 of 2 items)
- (g) 9: Momentum (5 of 8 items)
- (h) 10: Work, Energy and Power (6 of 9 items)
- (i) 11: Vibrations and Waves (7 of 8 items)
- (j) 12: How Light Behaves (4 of 4 items)
- (k) 13: Interference and Diffraction (4 of 8 items)

If the gaps adumbrated by this analysis are real, then it appears that responsibility for them must be divided



Teachers at the earlier levels of the secondary school should be ensuring that students leave their courses with a good command of basic physical principles and relations. Those at the upper level should first of all be checking that their incoming students have this basic knowledge, which appears lacking in many cases, and then reteaching the material where necessary. (This may be of especial importance in Physics, since the usual pattern of study leaves a one-year period between the students' previous Physics course and the Grade Thirteen course, and a great deal may be forgotten in a year.) All teachers should be covering with the appropriate amount of time and attention those topics which the guidelines state to be worthy of major emphasis. And university teachers should not expect high competence in other areas of the subject, which must of necessity be short-changed if sufficient time is to be spent on the more important areas.

### 3.4 ENGLISH

With English as a first language, as with the other language areas studied, it is important to keep in mind the difficulties encountered in relating specific skills (Project II data) to specific topics or objectives (Project III data). The kinds of tests and instruments employed did not lend themselves to this type of correspondence. Also, it was necessary to restrict evaluation of student performance in English to the specifics of reading, language and writing, leaving aside the many objectives related to literature, which evidently compose a high percentage of content in many courses at the interface. Consequently a review of apparent anomalies, gaps or duplications must be severely restricted in relation to all possible course objectives, and must refer to objectives in rather general terms.

In the interproject analysis of English it will be apparent that no significant duplications have emerged. Expectations generally appear either to be in conformity with student

performance, or else overly optimistic. There may indeed be duplications in the area of literature as so high a proportion of time and emphasis is given to this area of English, but this is not discernible from an analysis that has had to be confined to reading, language and writing.

One "gap" in testing in the areas of language and reading has been emphasized at different points in the chapter dealing with English, but should probably be underlined here. It is evident that the language test employed in this study - the most appropriate available - is too difficult for all but the university-bound student. It does serve no doubt as a screen to separate that student from the rest, but it is not helpful in characterizing performance in language or reading below that level. As well, responses to the Test Appraisal Inventories indicated that teachers felt some discomfort with the format of this test, and supported very strongly the inclusion of a sample or samples of student writing in any appraisal of language performance.

The various indices used to analyze gaps at the interface appear to indicate that in most aspects of "literacy" examined, secondary and post-secondary teachers have made a fairly realistic estimate of the competences in English of SSGD and SSHGD students. Though all teachers would like to see performance better than it is, we find fairly strong evidence of a gap in expectation only for reading ability at the Grade Twelve-CAAT interface. It is probably true that first year CAAT teachers have higher expectations concerning the reading ability of their incoming Grade Twelve graduates than are warranted. Some strategies should probably be found - perhaps more time for reading, perhaps a more formal program of reading instruction - to improve the reading skills of students in general level programs. This gap does not appear to extend to SSHGD students proceeding to university; the relatively greater emphasis placed there on inference skills than on reading for literal meaning appears to be in accord with performance.

The main gap discerned was the distance between what teachers in this study say should be emphasized in writing, and what in fact appears to be the case in terms of time given to writing in a high proportion of courses in all but the CAATs.

Serious errors in grammar, word choice and sentence structure did not characterize the writing of students above the 25th percentile at either interface, and students generally showed competence in organizing what they had to say.

The two serious concerns in the samples of writing examined closely were, first, the frequency of errors in conventions, and second, the general dullness of the writing.

One direction that might be followed to help close these gaps is a shift in course emphasis to provide more writing opportunities. As well, something can be said about the kind of emphasis needed in writing programs. There does not appear to be a need for analysis, drills, and reviews of learning about the nature of the sentence. Rather the emphasis should be on the creation of more effective stimuli for writing, and the encouragement of the student to write with commitment for a real audience and to experiment with diction and style. A writer with a strong sense of audience is likely to show more respect for the conventions of written English as well. Lastly, greater emphasis on language and writing in the program would ensure that the students have more frequent opportunities to write.

### 3.4 FRENCH

In the study of French as a second language, there was a generally good fit between teacher expectations and student performance in both reading and listening skills. Performance was consistently at an acceptable level in these areas.



This pattern is also true of pronunciation, but a different pattern emerges when it comes to other skills connected with speaking, and to writing. Although average performance in writing and speaking was at a reasonable level, the amount of variability in performance was very great, ranging from almost total inability to speak or to write fluently to a very high degree of facility in using the language. In these areas one can only say that there exist simultaneously a gap and a duplication. The large number of students performing poorly cannot help but be out of their depth in a university course; the equally large number performing well must be frustrated by the need for university teachers to devote time to bringing others up to the same standard of performance.

Somewhat the same situation holds with respect to grammar; variability was great here as well. However, the average standard of performance was lower here than would be suggested by the writing and speaking results as a whole, and consequently this is more properly defined as a gap, with some accompanying problem of duplication for those students who have achieved a high level of mastery of morphology and syntax.

In French as a second language, then, the "passive" skills of reading and listening were handled satisfactorily and with relatively little variability; performance largely matched teacher expectations. The "active" skills of writing and speaking were problem areas (except for pronunciation). Average performance on writing and speaking, excluding the component of grammatical correctness, was adequate, but with very high variability. Average command of grammar was not adequate, and the same degree of variability was evidenced.

### 3.5 FRANÇAIS

In Français (French as a first language) the greatest

difference in competence between Grade Twelve and Grade Thirteen students was manifested in vocabulary. There was a marked difference in scores for the two groups on the section of the language test concerned with vocabulary, and on the evidence of the score distributions it must be assumed that this difference resulted largely from very poor performance by Grade Twelve students not intending to pursue secondary education, but rather planning either to begin post-secondary work (presumably at a CAAT) or to leave the system. This assumption is reinforced by a comment of those researchers who engaged in a close examination of some of the writing produced by the students tested; they remark that some students had a very poor command of vocabulary (see Appendix B to the Project II report).

Some weakness was evidenced at both the Grade Twelve and Grade Thirteen levels in grammar. The language test concerned itself specifically with spelling as related to agreement (subject-verb, adjective-noun, etc.). In spelling, both here and in the writing produced by the students, there were apparent difficulties in spelling caused by the fact that words pronounced alike are spelled differently (e.g., "c'est/s'est"). Subject-verb agreement appeared to be a particular problem in grammar, especially in cases where the subject was somewhat complicated in form. Many errors in usage, especially of prepositions or verbs, appeared to be attributable to interference from English. The frequency of errors in the writing test must be considered unacceptably high, with even those Grade Thirteen students planning to attend university producing an average of one error of some kind per ten words.

A general comment made on the style evidenced by the students in the writing exercise is that students showed a strong tendency to use in formal writing many expressions and structures unsuitable to that mode, although acceptable in informal French. This was attributed at least in part to the relative lack of exposure to formal French which is a

result of the minority status of Franco-Ontarians (see the Project II report, Appendix B).

The same readers commented that the level of logical presentation of argument in these papers was very low - that in fact only a tiny minority of students showed a capacity to argue a position in an organized and logical way.

Reading was generally well-handled at both grade levels, except for one reading comprehension passage in which many students apparently failed to detect the ironic tone, and consequently gave answers to the related questions which were based on a literal interpretation of the text. Some emphasis is indicated on the ability to appreciate such subtleties of tone.

### 3.6 ANGLAIS

In Anglais (English as a second language), the students tested performed at what appeared to be a quite acceptable level in reading. Their ability to write a summary of the longer passage presented to them in the second half of the test appeared to be somewhat less than their reading ability, but performance was consistent and not unacceptable. Great variation was manifested, however, in the portion of the writing exercise which required them to state and defend their own positions on the subject discussed in the passage. Grade Twelve performance, particularly among those students probably enrolled in the less demanding courses, was far below the quite acceptable standard set by the Grade Thirteen students.

### 4. CONCLUSION

One conclusion, which is carefully documented in the case of Grade Thirteen Mathematics, is that there is no golden era of the past, and no greener field far away, offering readymade solutions to the problems encountered by



school programs in the basic subjects. There is strong evidence that the group of students passing through the interface between secondary and post-secondary studies is as well-educated and as well-prepared in basic skills as were similar groups in Ontario in the past,<sup>1</sup> and as are comparable groups or students in other countries.<sup>2</sup>

As we have pointed out, probably the most striking change in education in Ontario over the past 25 years has been the dramatic increase in the numbers and proportions of young people availing themselves of the right to education in the senior years of secondary school and in post-secondary institutions. This phenomenal expansion has placed unprecedented strains upon the province's resources of both money

---

<sup>1</sup>We have already mentioned the stability of results in Grade Thirteen mathematics. Although this sort of hard evidence is not available in other subject areas, it may be of interest to quote from The President's Report 1950-1951, University of Toronto; the words are Sidney Smith's:

The Department of English at University College recently gave a simple examination to students in all three years of the Pass Course who had elected English as one of their subjects. The examination was designed to test the student's knowledge of punctuation, the range of his vocabulary, and his ability to summarize a piece of expository prose. The results were, in the highest degree, alarming. The failure rate was 65 per cent. Certainly there is no reason to expect that the failure rate would be any lower if a similar examination were given to students in the Faculty of Arts who do not take English, or to students in the professional faculties. Two conclusions present themselves: the training in English given in the high schools is no longer an adequate equipment for work in the university; and it appears to be incumbent on the university to take immediate steps to make sure that illiteracy no longer dwells in easy partnership with the possession of a degree.

<sup>2</sup>The second conclusion of the International Study of Student Achievement is: "Between countries with long established universal educational systems there is not much variation in either the average or the range of achievement. In all these countries there are both children who have learned a great deal and others who have learned little." (Peaker)

and manpower, and one of the effects of the resultant strain may be the kind of public anxiety now being evidenced.

One of the most important factors in this expansion has been the inclusion in the student population of those groups who are enrolled in the General courses in senior secondary school, and in Colleges of Applied Arts and Technology. If we examine those students in this group who do not appear to have learned very much, or who are greatly dissatisfied with their schooling, we can perhaps discover where the system has room for improvement; in fact, we may be confident that improvements of this sort are almost a necessity if we are to continue to have public support for education. If on the other hand we examine those students in this group who have learned well, and who are satisfied with their education, we have evidence of the kind of success that the expansion of our educational system was designed to achieve. We have many students who would not in the past have been served at all by the system after their early teenage years; now they are served well, and society reaps its reward from them in increased potential for productive and useful work. This second group of students is the profit we have gained from expansion; the first group may presently be counted as our loss, but presents us with the potential for future gain.

It is clear from the data presented in this report and in the Project II report that even the best tests available for use in this study were inadequate to the task of measuring student performance throughout the domain of their studies. If decisions about education are to be founded on data that are amenable to scientific analysis, the development of tests to measure student performance at the end of secondary school is a necessity, and should be given high priority.

Even with these imperfect instruments, however, it is clear that real gaps, duplications and other anomalies were evidenced in virtually all subject areas. It is important for

teachers at both sides of the interface to study the data, and to attempt to come to some kind of resolution of the current problems. The identification of particular gaps, duplications and anomalies in this 1976 study may in the long run be of less significance than the concurrent development of the techniques for gathering the needed data. We are not suggesting that this technology is advanced - rather, it is only emerging. However, even at this stage it is adequate to the task of annual or periodic monitoring of the provincial programs, and is useful as well as a prototype for the monitoring of programs by school systems.

What we have seen in this study is clear evidence, from a number of types of data and from a number of perspectives, that the perceptions of various publics with an interest in education do not entirely correspond with reality. That there are problems in our educational system at the secondary-post-secondary interface is not in dispute. However, many of these problems are not new, and most of those that are of recent origin are direct consequences of the dramatic increase in the population of our schools, colleges and universities. We hope that our data will point out some of the problems, suggest some possible solutions, and form the foundation for fruitful debate on the future direction of education in Ontario.



## REFERENCES

- Fleming, W.G. Education: Ontario's Preoccupation. Toronto: University of Toronto Press, 1972.
- King, Alan J.C., et al. Continuity and Diversity of Courses. The Secondary-Post-Secondary Interface Project III: Nature of Programs. Kingston: Queen's University, 1976.
- Peaker, Gilbert F. An Empirical Study of Education in Twenty-One Countries: A Technical Report, p. 172. Stockholm: Almqvist and Wicksell International, 1975.
- Traub, R., Wolfe, R., Wolfe, C., Evans, P., Russell, H.H. Secondary-Post-Secondary Interface Project II: Nature of Students. Toronto: The Ontario Institute for Studies in Education, 1976.



## BIBLIOGRAPHY OF INTERFACE STUDY REPORTS

1. Ministry of Education and Ministry of Colleges and Universities, Ontario, 1977, SECONDARY/POST-SECONDARY INTERFACE STUDY SUMMARY REPORT.
2. Ministry of Education and Ministry of Colleges and Universities, Ontario, 1977, ETUDE SUR LA TRANSITION DU NIVEAU SECONDAIRE AU NIVEAU POSTSECONDAIRE -- RAPORT SOMMAIRE.
3. Canadian Facts Company Limited, 1976, SECONDARY/POST-SECONDARY INTERFACE STUDY PROJECT I: ROLES AND RESPONSIBILITIES OF THE SECONDARY AND POST-SECONDARY INSTITUTIONS, Volumes I and II.
4. Ontario Institute for Studies in Education, 1976, SECONDARY - POST-SECONDARY INTERFACE PROJECT; NATURE OF STUDENTS: Traub, R; et al.; Volumes I and II.
5. Queen's University, Faculty of Education, 1976, CONTINUITY AND DIVERSITY OF COURSES: THE SECONDARY/POST-SECONDARY INTERFACE, PROJECT III: NATURE OF PROGRAMS: King, A; et al.; Volumes I and II.



6. Ontario Institute for Studies in Education, 1976,  
INTERPROJECT ANALYSIS: PROGRAMS AND STUDENT ACHIEVEMENT AT  
THE SECONDARY-POST SECONDARY INTERFACE , Russell, H. H.;  
et al.

Note: Reports 3, 4 and 5 are in two volumes. Volume I, the main research report is available through the Ontario Government Bookstore; Volume II, contains appendix material and was produced in limited quantity; it is being distributed to Ontario University and CAAT libraries, and to Ministry of Education regional offices. If sufficient demand exists Volume II will be made available by the Ministry of Education on microfiche.









